INEEL/EXT-2002-00779
Revision 2

In Situ Biorernediation Remedial Action Groundwater Monitoring Plan for Test Area North, Operable Unit 1-07B

December 2003

Idaho Completion Project

Bechtel BWXT Idaho, LLC

INEEUEXT-2002-00779
Revision 2
Project No. 23339

In Situ Bioremediation Remedial Action Groundwater Monitoring Plan for Test Area North, Operable Unit 1-07B

December 2003

Idaho Completion Project
Idaho Falls, Idaho 83415

Prepared for the
U.S. Department of Energy
Assistant Secretary for Environmental Management
Under DOE/NE Idaho Operations Office
Contract DE-AC07-99ID13727

ABSTRACT

This groundwater monitoring plan supports the Operable Unit 1-**07B** In Situ Bioremediation Remedial Action Work Plan for implementing the final remedy for the Operable Unit **1-07B** hotspot. The final hotspot remedy includes installing and operating an electron donor injection facility (consisting of a new injection well, injection equipment, onsite laboratory capabilities, and ancillary equipment), constructing two new groundwater monitoring wells, and monitoring groundwater at **14** existing locations and the two new monitoring wells. The hotspot remedy will be implemented in four phases: (1) interim operations, (2) initial operations, **(3)** optimization operations, and **(4)** long-term operations. These phases begin and end based upon conditions observed in the groundwater. **As** a result, remedy performance and compliance with remedial action objectives will be monitored under this plan throughout all implementation phases. This plan documents the procedures and rationale for groundwater monitoring to be conducted during each of the four phases. Data collected under this groundwater monitoring plan will be used to assess progress of the remedy, determine the need for operational changes, and support agency periodic performance reviews.

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ACRONYMS

COC	chain of custody
COD	chemical oxygen demand
D&D&D	deactivation, decontamination, and decommissioning
DCE	dichloroethene
DQO	data quality objective
E/E/M	ethene/ethane/methane
EPA	Environmental Protection Agency
ER	Environmental Restoration
FFA/CO	Federal Facility Agreement and Consent Order
FLL	Field Lab Lead
FLUTe	Flexible Liner Underground Technologies
FTL	field team leader
GC-FID	gas chromatography – flame ionization detector
GWMP	Groundwater Monitoring Plan
HASP	Health and Safety Plan
HDPE	high-density polyethylene
ID	identification
IDEQ	Idaho Department of Environmental Quality
IDHW	Idaho Department of Health and Welfare
INEEL	Idaho National Engineering and Environmental Laboratory
IRC	INEEL Research Center
ISB	in situ bioremediation
MCL	maximum contaminant level
MCP	management control procedure
MDL	Method Detection Limit

MNA	monitored natural attenuation
NPTF	New Pump and Treat Facility
O&M	operations and maintenance
ou	operable unit
PCE	tetrachloroethene
PE	performance evaluation
QA	quality assurance
QAPjP	Quality Assurance Project Plan
QC	quality control
RA	remedial action
RAO	remedial action objective
RAWP	Remedial Action Work Plan
SAM	Sample and Analysis Management
SAP	Sampling and Analysis Plan
SPME	solid phase micro extraction
TAN	Test Area North
TBD	to be determined
TCE	trichloroethene
TOS	Task Order Statement
TPR	technical procedure
TSF	Technical Support Facility
VOA	volatile organic analysis
VOC	volatile organic compound
WRRTF	Water Reactor Research Test Facility

In Situ Bioremediation Remedial Action Groundwater Monitoring Plan for Test Area North, Operable Unit 1-07B

1. INTRODUCTION

This Groundwater Monitoring Plan (GWMP) supports the *In Situ Bioremediation Remedial Action Work Plan for Test Area North Final Groundwater Remediation, Operable Unit 1-07B* (DOE-ID 2003a) (hereafter referred to as the ISB RAWP). It implements the final remedy, as identified in the *Record of Decision Amendment for the Technical Support Facility Injection Well (TSF-05) and Surrounding Groundwater Contamination (TSF-23) and Miscellaneous No Action Sites Final Remedial Action* (DOE-ID 2001). The remedy entails injection of an electron donor to stimulate in situ biodegradation of chloroethene contaminants and groundwater sampling from a network of wells to monitor the process. Elements of the remedy added subsequent to the signature of the Record of Decision (ROD) Amendment include an electron donor injection facility and two new monitoring wells. The injection facility consists of a new injection well [Test Area North (TAN)-18591, injection equipment, and onsite laboratory capabilities. The two new monitoring wells, TAN-1860-1 and TAN-1861-2, have been located to provide cross-gradient monitoring capabilities in the vicinity of TAN-28 and TAN-30A. Data collected in accordance with this GWMP will be used to assess progress of the remedy, determine the need for operational changes, and support agency periodic performance reviews.

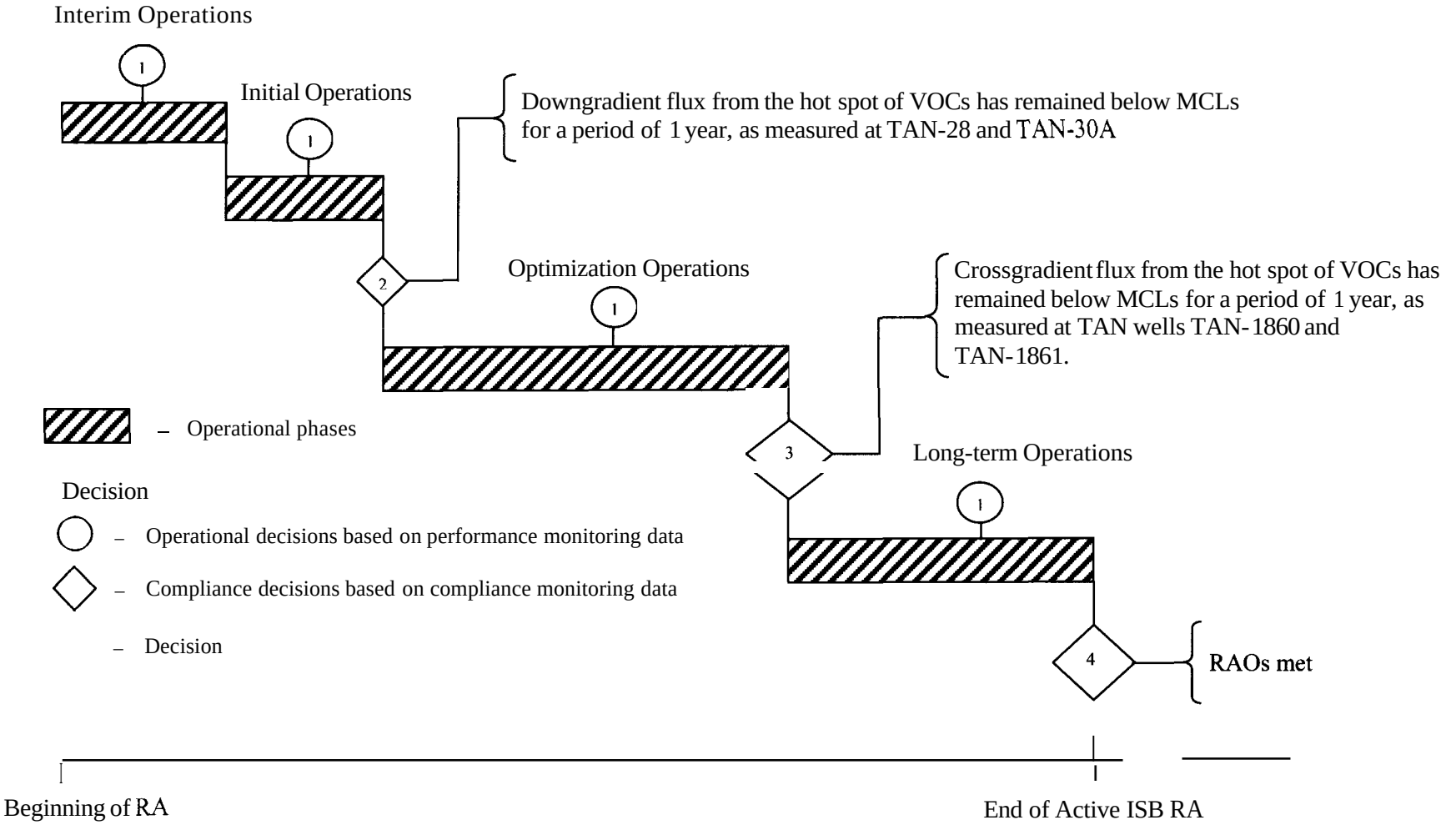
This document has been reviewed in accordance with governing requirements of the *Federal Facility Agreement and Consent Order for the Idaho National Engineering Laboratory* (FFA/CO) for primary documents (DOE-ID 1991). Appendix A contains agency comments and the comment resolutions from the agency review of the In Situ Bioremediation (ISB) GWMP (Draft) version of the document. Appendix B contains comments and comment resolutions from the agency review of the ISB GWMP (Draft Final) version.

Implementation of the Operable Unit (OU) 1-07B final remedy is defined in the ISB RAWP (DOE-ID 2003a). The ISB component of the remedy will be implemented in four phases (see Figure 1-1), as follows:

- **Interim operations:** This phase is a continuation of predesign operational activities, including lactate injection and performance monitoring. It will also implement activities to evaluate alternate electron donors, develop injection and monitoring strategies that will support initial operations, and refine the ISB simulation model. Interim operations will end when construction of the electron donor injection facility and new monitoring wells is complete.

- **Initial operations:** This phase of remedy implementation will begin when construction is complete and will focus on distributing electron donor adequately throughout the residual source area, and cutting off downgradient contaminant flux of volatile organic compounds (VOCs) from the hotspot. Initial operations will be complete when VOC concentrations at TAN-28 and –30A (shown on the map of monitoring well locations in Figure 1-2) are below maximum contaminant levels (MCLs).

- **Optimization operations:** This phase will focus on maintaining adequate electron donor distribution to remediate the aquifer in the vicinity of the hotspot to risk-based levels, and cutting off cross-gradient flux of VOCs from the hotspot. This phase of operations will be complete when VOC concentrations at TAN-1860 and TAN-1861 are below MCLs.



MCL = maximum contaminant level
RA = remedial action
RAO = remedial action objective
TAN = Test Area North
VOC = volatile organic compound

Figure 1-1. Remedial action implementation sequence.

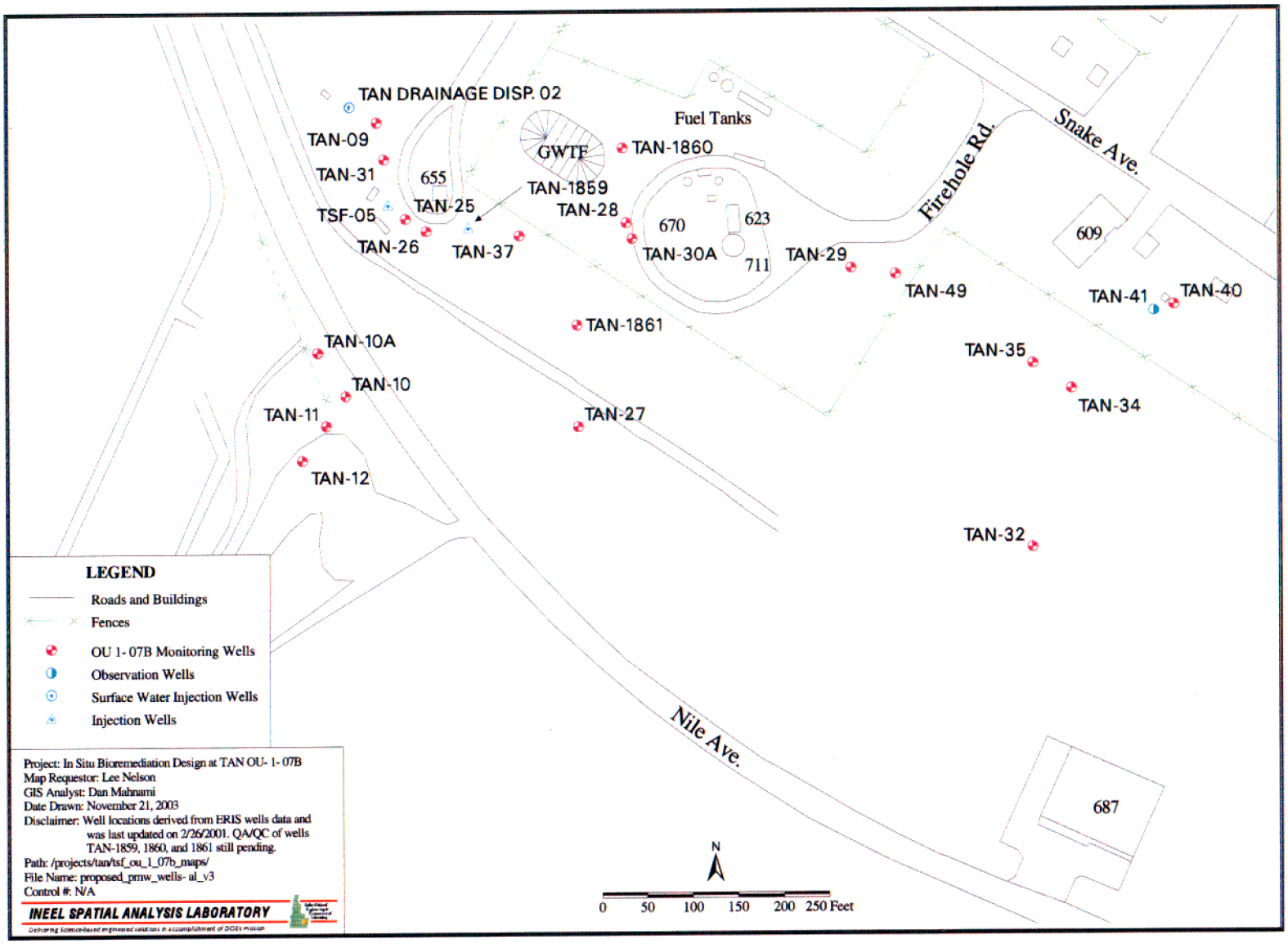


Figure 1-2. Source area monitoring and In Situ Bioremediation electron donor injection well locations.

- **Low-term operations:** This phase will begin when electron donor is distributed throughout the residual source area. Continued ethene production will also be observed throughout this phase. This phase of operations will be complete when ethene production has ceased and VOC concentrations are below risk-based levels throughout the hotspot area.

Figure 1-1 also shows the decisions to be made during remedy implementation, including operational performance decisions and compliance decisions. Specific decisions corresponding to the numbers shown in Figure 1-1 include:

Decision 1 Determine in each of the four phases whether operational changes are required by routinely monitoring the performance of the ISB system with respect to indicator parameters including VOCs, tritium, Sr-90, Cs-137, gross alpha, ethene/ethane/methane, redox parameters, electron donor, bioactivity, and nutrients

Decision 2 Determine whether downgradient flux of contaminants from the hotspot has been cut off, as evidenced by VOC concentrations below MCLs at TAN-28 and -30A

Decision 3 Determine whether cross-gradient flux of contaminants from the hotspot has been cut off, as evidenced by VOC concentrations below MCLs at TAN-1860 and TAN-1861

Decision 4 Determine whether long-term operations are complete (the compliance criteria for long-term operations will be specified in the ISB Remedial Action Report).

Groundwater monitoring data are required during each phase of remedy implementation to support the decisions listed above. This GWMP implements the Environmental Protection Agency (EPA) data quality objective (DQO) process (EPA 1994), which was used to design and implement a data collection plan to acquire the required data at quality levels appropriate for data uses for each phase. Data quality objective development is discussed in detail in the ISB RAWP (DOE-ID 2003a) and summarized in Section 2 of this GWMP. Following discussion of the DQOs, this GWMP presents the monitoring strategy for ISB and defines the protocols to be used for groundwater sample management (i.e., collection, handling, and analysis), data management, and quality assurance (QA) activities associated with the ISB remedial action. This GWMP does not specifically address data collection for other OU 1-07B remedy components, which include pump-and-treat of the medial zone and monitored natural attenuation (MNA) of the distal zone. However, data collected as part of ISB remedy implementation may be used by other remedy components to fulfill their respective data needs.

Supporting information for this GWMP is contained in Appendices C and D. Appendix C contains examples of the Sampling and Analysis Plan *(SAP)* tables that will be created for each sampling event to implement the sampling strategy. Actual *SAP* tables for each reporting period will be compiled in the ISB Periodic Report. Appendix D contains construction details for the monitoring wells that will be sampled.

1.1 Site Background and Hydrogeology

The TSF-05 injection well was used from 1953 to 1972 to dispose of liquid waste streams generated by operations at Test Area North (TAN). These waste streams included low-level radioactive wastewater, industrial wastewater, organic solvents, and sanitary sewage. The practice of waste injection into the Snake River Plain Aquifer (SRPA) resulted in a nearly 3-km (2-mi) long plume of contamination. Detailed descriptions of the historical background can be found in the *Remedial Znvestigation Final Report with Addenda for the Test Area North Groundwater Operable Unit I-07B at the Zdaho National Engineering Laboratory* (Kaminski et al. 1994), and in the *Record of Decision for the Technical Support Facility Injection Well (TSF-05) and Surrounding Groundwater Contamination (TSF-23) and*

Miscellaneous No Action Sites Final Remedial Action (DOE-ID 1995). The contaminants of concern in groundwater at the site include the VOCs trichloroethene (TCE), tetrachloroethene (PCE), trans-1,2-dichloroethene (trans-1,2-dichloroethene (DCE)), and cis-1,2-dichloroethene (cis-1,2-DCE), as well as the radionuclides tritium (H-3), strontium-90 (Sr-90), cesium-137 (Cs-137), and potentially uranium-234 (U-234). Figure 1-3 shows the contaminant plume and its location with respect to the Technical Support Facility (TSF).

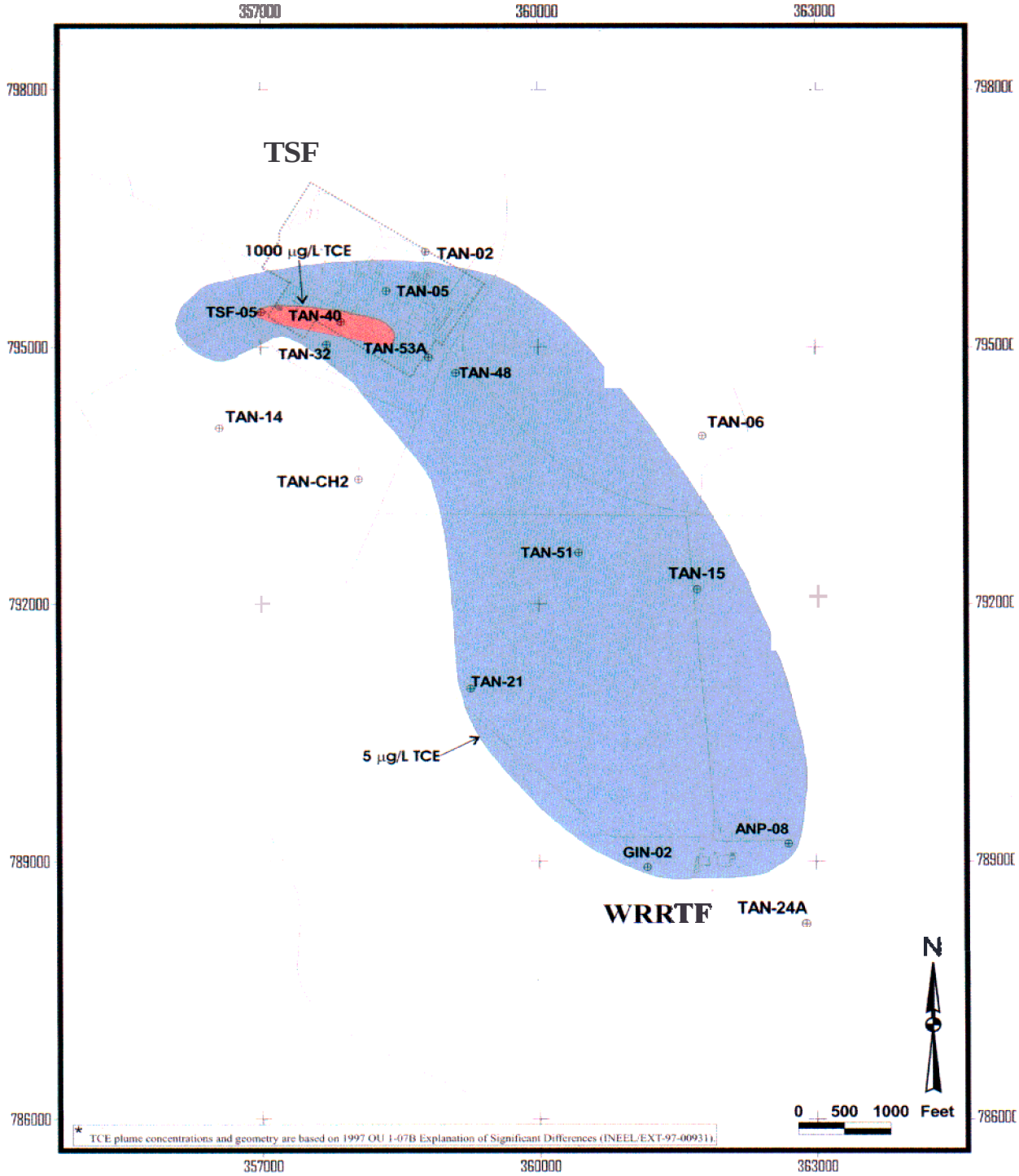


Figure 1-3. Contaminant plume at Test Area North.

The SRPA underlying TAN is composed of a complex layering of fractured basalt flows and sedimentary interbeds deposited during prolonged periods of volcanic quiescence. Depth to water in the vicinity of TAN is approximately 64 m (210 ft). The most significant recharge feature with respect to the groundwater contamination at TAN is a disposal pond west of Well TSF-05. Constructed in 1971 for disposal of the liquid waste streams previously discharged to the TSF-05 injection well, this pond receives on average about 104,300 L (27,550 gal) per day and 3.17 million L (838,000 gal) per month of wastewater based on 2001 operating records. Recharge from this pond is believed to play a significant role in the eastward migration of TCE from Well TSF-05 (Sorenson et al. 1996).

The aquifer at TAN appears to be unconfined, although locally confined conditions may exist due to the presence of sedimentary interbeds or dense, relatively impermeable basalt flows. The most significant sedimentary interbed at TAN occurs at about 125 m (410 ft) below land surface (bls) at Well TSF-05. This interbed ranges in thickness from about 2.4 m (8 ft) to more than 6 m **(20** ft) and is laterally continuous and extensive. All evidence gathered to date suggests that this interbed effectively isolates the aquifer below it from the water above it. It is important to note that the interbed slopes at about 1 degree in a southerly direction, thus the thickness of the aquifer above the interbed at TAN increases from about 61 m (200 ft) near Well TSF-05 to more than 91 m (300 ft) at the leading edge of the TCE plume.

The TCE plume within the aquifer is stratified near the source area, with the highest concentrations in the upper portions of the aquifer. Several conceptual model reports published since extensive characterization work has been conducted detail the understanding of stratigraphy, aquifer behavior, and TCE plume dynamics (Bukowski and Sorenson 1998; Bukowski et al. 1998; Wymore et al. 2000).

1.2 Description of Remedial Action

In situ bioremediation was identified in the OU 1-07B ROD Amendment (DOE-ID 2001) as the remedy for the hotspot, which was defined in 1997 as that portion of the contaminant plume with TCE concentrations greater than 20,000 µg/L (INEEL 1997). In situ bioremediation takes advantage of naturally occurring bacteria that break down contaminants during metabolism of a food source. The particular application of ISB at TAN requires injection of an electron donor (i.e., sodium lactate, whey, **or** molasses) into the secondary source area in the hotspot. This amendment increases the number of bacteria, thereby increasing the rate at which the VOCs are degraded to non-hazardous compounds. This technology destroys the organic compounds in the hotspot without bringing them aboveground, preventing risk to workers and the environment. Based on actual field observations, ISB also degrades the secondary source. Degradation products generated by the bioremediation process (e.g., DCE and vinyl chloride) are degraded by the same process to ethene, chloride, water, and carbon dioxide.

Application of the ISB remedy at TAN will occur in the four phases described in Section 1, which are shown graphically in Figure 1-1 and described in detail in the **ISB** RAWP (DOE-ID 2003a). These phases begin and end based upon conditions observed in the groundwater. For this reason, groundwater monitoring is a necessary component of the remedial action. This plan documents the procedures and rationale for groundwater monitoring to be conducted during each of the four phases. In situ bioremediation operations and maintenance (O&M) for implementation of these four phases are addressed separately in the ***In Situ Bioremediation Operations and Maintenance Plan for Test Area North Final Groundwater Remediation, Operable Unit 1-07B*** (DOE-ID 2003b) (hereafter referred to as the OU 1-07B ISB O&M Plan).

2. DATA QUALITY OBJECTIVES

Development of DQOs for the ISB component of the remedy is presented in detail in the ISB RAWP (DOE-ID 2003a) and is summarized in this section. The DQOs have been prepared based on decisions requiring groundwater monitoring data, as well as on EPA DQO guidance (EPA 1994), method detection limits, and experience with the sampling and analysis methods to date. Requirements for data quality for all Idaho National Engineering and Environmental Laboratory (INEEL) Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) investigations and remedial responses are defined in the *Quality Assurance Project Plan for Waste Area Groups 1, 2, 3, 4, 5, 6, 7, 10, and Inactive Sites* (DOE-ID 2002) (QAPjP).

Decisions requiring groundwater monitoring data (see Figure 1-1) are listed in Section 1 of this report. The compliance decisions are based on the remedial action objectives (RAOs) and performance criteria for the **ISB** component of the remedy, as discussed in the RAWP. The operational decisions are based on performance indicators developed during **4** years of field experience at OU 1-07B, as described in the OU 1-07B **ISB** O&M Plan (DOE-ID 2003b). Application of the DQO process to these decisions has resulted in the data collection program described in Section **3.**

3. DATA COLLECTION PROGRAM

This section describes the program designed to collect data at the appropriate locations, frequencies, and quality levels required to support Decisions 1 through 4 listed in Section 1. It also contains details of the data collection program, including sampling strategy, equipment, and procedures that support implementation of the ISB remedy component.

3.1 Sampling Strategy

The **ISB** sampling strategy for monitoring the status of the ISB remedy is based on the results of the DQO process and the experience gained from over 4 years of ISB field evaluation and predesign operations. Two types of monitoring (i.e., performance and compliance) are defined and a detailed discussion of the specific indicator parameters for both types of monitoring is provided in this section.

Tables 3-1 and 3-2 portray the performance and compliance monitoring strategies, respectively, for the four operational phases: locations, analytes, sampling frequencies, and data quality levels. Data quality levels are fully defined and their application is discussed in the Quality Assurance Project Plan (QAPjP) (DOE-ID 2002), as well as in the DQO development discussion in the ISB RAWP (DOE-ID 2003a). Definitive data have been required to date for assessing completion of remedial actions at the INEEL, and this data quality level is cited for ISB compliance monitoring for initial, optimization, and long-term operations. In general, definitive level data are generated using rigorous analytical methods such as approved EPA or American Society of Testing and Materials (ASTM) methods. Either analytical or total measurement error must be determined. Definitive data quality assurance/quality control (QA/QC) elements include (DOE-ID-2002):

- Sample documentation (e.g., location, date, and time).
- Chain of custody.
- Sampling design approach.
- Initial and continuing calibration.
- Determination and documentation of detection limits.
- Analyte or property identification.
- QC blanks (field and method).
- Matrix spike recoveries.
- Analytical error determination. One sample will be analyzed in replicate and the mean and standard deviation determined and reported.
- Total measurement error determination. Duplicate samples will be collected at one sampling location in each sampling round, analyzed, and the mean and standard deviation determined and reported.

Table 3-1. In situ bioreme

Monitoring Type/Strategy Element				
Decision number		1	1	1
Monitoring locations	TSF-OSA, TSF-OSB, TAN-IOA, TAN-25, TAN-26, TAN-27, TAN-28, TAN-29, TAN-30A, TAN-31, TAN-37A, TAN-37B, TAN-37C, and TAN-D2.	TSF-05A, TSF-OSB, TAN-IOA, TAN-25, TAN-26, TAN-27, TAN-28, TAN-29, TAN-30A, TAN-31, TAN-37A[a], TAN-37B, TAN-37C, TAN-D2, TAN-1859" TAN-1860[b], and TAN-I 861[b]		
Monitoring frequency/analytes				Quarterly: VOCs (PCE, TCE cis- and trans-DCE, vinyl chloride), electron donors' (COD, lactate, acetate, propionate, butyrate), redox parameters (ferrous iron, sulfate), bioactivity parameters (alkalinity), dissolved gases (ethene, ethane, methane), and tritium Semiannual: Nutrients (ammonia-nitrogen, phosphate) Annual: definitive confirmation for VOCs
Data quality required[d]	Screening w/definitive confirmation for VOCs Definitive for radionuclides Screening for all other analytes			
Data validation level required'	Level A for VOC definitive confirmation and radionuclide analyses No data validation for onsite and IRC laboratory data			

Table 3-1. (continued).

Monitoring Type/Strategy Element	Operational **Phase**			
	Interim	Initial	Optimization	Long-term

a. Sampling of TAN-1859 is not required by the RAWP, but it may be performed periodically for performance indicators.
b. More than one location may be sampled periodically in these wells per direction from the ISB Technical Lead.
c. The electron donor parameters monitored are subject to change if an alternate electron donor is injected.
d. Data quality levels are defined in the QAPjP (DOE-ID 2002).
e. Data validation levels are defined in the QAPjP (DOE-ID 2002).

COD = chemical oxygen demand
DCE = dichloroethene
INEEL = Idaho National Engineering and Environmental Laboratory
IRC = INEEL Research Center
ISB = in situ bioremediation
PCE = tetrachloroethene
QAPjP = Quality Assurance Project Plan
RAWP = Remedial Action Work Plan
TAN = Test Area North
TCE = trichloroethene
TSF = Technical Support Facility
VOC = volatile organic compound

Table 3-2. In situ bioremediation remedial action groundwater compliance monitoring strategy summary.

Monitoring Type/Strategy Element	Operational Phase			
	Interim	Initial	Optimization	Long-Term"
Decision number	N/A	2	3	4
Monitoring duration	N/A	1 year		TBD
Monitoring frequency	N/A	Quarterly		TBD
Monitoring locations	N/A	TAN-28 TAN-30A	TAN-1860 and TAN-1861	TBD
Analytes	N/A	VOCs (PCE, TCE, cis- and trans-DCE, vinyl chloride)		TBD
Data quality required[b]	N/A	Definitive		TBD
Data validation level required'	N/A	Level A		TBD

a. The Long-Term Compliance monitoring strategy will be submitted in the ISB RA Report.
b. Data quality levels are defined in the QAPjP (DOE-ID 2002).
c. Data validation levels are defined in the QAPjP (DOE-ID 2002).

DCE = dichloroethene
N/A = Not applicable
PCE = tetrachloroethene
QAPjP = Quality Assurance Project Plan
RA = remedial action
TAN = Test Area North
TBD = To be determined
TCE = trichloroethene
VOC = volatile organic compound

Screening level data (generated using rapid, less precise analytical methods with less rigorous sample preparation) are cited for all performance monitoring indicators except VOCs, for which screening with definitive confirmation is specified. Screening with definitive confirmation is defined in the QAPjP (DOE-ID 2002) as "...at least 10% of the screening data are confirmed using analytical methods and QA/QC procedures and criteria associated with definitive data." Definitive confirmation will not be used for performance indicators that do not have action levels.

It is important to note that TAN-1860 and TAN-1861 may be equipped such that multiple locations can be sampled in each well, and that TAN-37 may be equipped such that more than the three current monitoring locations can be sampled. The minimum performance monitoring requirement for these wells for initial and optimization operations is to sample one location each in TAN-1860 and TAN-1861 and the three currently monitored locations in TAN-37 during each monthly performance monitoring round. Periodic sampling of additional locations in these wells will be conducted per direction from the ISB Technical Lead and/or project manager, and the *SAP* tables will be adjusted accordingly. In addition, TAN-1859 may be sampled periodically for performance indicators as directed by the ISB technical lead and/or project manager.

The overall OU 1-07B ISB remedial action performance and compliance monitoring sampling strategies include:

- **Interim Operations Performance Monitoring** (Decision 1): Includes monthly sampling for performance indicator parameters at 14 ISB locations listed in Table 3-1 for the duration of the phase. Monthly monitoring at the 14 existing locations during the ISB field evaluation and predesign operations was found to effectively identify trends in parameters that indicate ISB system performance (INEEL 2000). Shorter-interval sampling for subsets of the performance indicators may be implemented, as directed by the ISB Technical Lead, to observe transient conditions (e.g., when testing electron donor injection strategies). This performance monitoring strategy also includes deploying and maintaining multi-parameter water quality instruments and/or tranducers, as directed by the ISB Technical Lead.

- **Initial Operations Performance Monitoring** (Decision 1): Includes monthly sampling for performance indicator parameters at 16 ISB locations (14 existing locations and newly installed monitoring wells TAN-1860 and TAN-1861) for the duration of the phase. This strategy incorporates monthly monitoring for VOCs at TAN-28 and TAN-30A to determine downgradient contaminant flux trends. Similar to the interim operations performance monitoring strategy described above, shorter-interval sampling for subsets of the performance indicators, as well as sampling of TAN-I 859 and sampling of additional locations in TAN-37, TAN-1860, and TAN-1861, may be implemented as directed by the ISB Technical Lead. This performance monitoring strategy also includes use of multi-parameter water quality instruments and/or tranducers in specific wells, as directed by the ISB Technical Lead.

- **Initial Operations Compliance Monitoring** (Decision 2): The strategy for determining when downgradient flux is cut off includes quarterly monitoring for 1 year at TAN-28 and TAN-30A for VOCs. This sampling will begin when performance monitoring indicates that VOC concentrations are below MCLs at TAN-28 and TAN-30A. These sampling events will be coordinated with regular monthly performance sampling; the samples will be analyzed using definitive methods.

- **Optimization Operations Performance Monitoring** (Decision 1): Includes monthly sampling for performance indicator parameters at 16 ISB locations **(14** existing locations and newly installed monitoring wells TAN-1860 and TAN-1861) for the duration of the phase. The monthly sampling frequency will be continued in order to identify any trends requiring operational modifications. This strategy incorporates monthly monitoring for VOCs at TAN-I 860 and TAN-1861 to determine crossgradient contaminant flux trends. Shorter-interval sampling for subsets of the performance indicators, as well as sampling of TAN-I 859 and sampling of additional locations in TAN-37, TAN-60, and TAN–61, may be implemented as directed by the ISB Technical Lead. This performance monitoring strategy also includes use of multi-parameter water quality instruments and/or tranducers in specific wells, as directed by the ISB Technical Lead.

- **Optimization Operations Compliance Monitoring** (Decision *3):* The strategy for determining when crossgradient flux of contaminants from the hotspot is cut off includes quarterly monitoring for VOCs for 1 year at TAN-1860 and TAN-I 861. This sampling will begin when performance monitoring indicates that VOC concentrations are below MCLs at TAN-1860 and TAN-1861. These sampling events will be coordinated with regular monthly performance sampling; the samples will be analyzed using definitive methods.

- **Long-Term Operations Performance Monitoring** (Decision 1): Includes quarterly sampling for performance indicator parameters at 16 ISB locations (14 existing locations and newly installed monitoring wells TAN-I **860** and TAN-1861) for the duration of the phase. The ISB system will be

functional and operational during this phase with a defined operating strategy, thereby reducing performance-sampling requirements. The number of monitoring locations and analytes may be reduced during this phase, as directed by the **ISB** Technical Lead. Shorter-interval sampling for subsets of the performance indicators, as well as sampling of TAN-1859 and sampling of additional locations in TAN-37, TAN-1860, and TAN–1861, may be implemented as needed to observe transient conditions. This performance monitoring strategy also includes use of multi-parameter water quality instruments and/or tranducers in specific wells, as directed by the **ISB** Technical Lead.

- **Long-Term Operations compliance monitoring** (Decision **4):** The Remedial Action Report will establish the sampling strategy to define when the remedy is complete.

Table 3-3 defines analytical methods, action levels, method detection limits, and data quality levels for each analyte and each monitoring phase. All other sampling and analysis details, including container types, sample preservation, holding time, analytical methods, and chain of custody (COC) requirements, are addressed in Section 4.

Nonroutine samples may occasionally be collected for various research projects or for other purposes. Sampling and analysis tables will be prepared for these non-routine samples as required. Non-routine sampling will be coordinated with routine sampling to the extent feasible.

'able 3-3. In situ ›ioremediation remedial action analytical method summary.

Analyte	Action Level[a]	Analytical Method	Method Detection Limit[b,c]	Monitoring Phase or Other Data Collection Activity
'OCs				
	5 µg/L	EPA 524.2[d] wide-bore capillary column	0.19 µg/L	Compliance
TCE	N/A	SW-8468260B[e]	5 µg/L	Definitive confirmation
	N/A	SPME-GC-FID	10 µg/L	Performance
	5 µg/L	EPA 524.2 wide-bore capillary column	0.14 µg/L	Compliance
PCE	NIA	SW-846 8260B	5 µg/L	Definitive confirmation
	N/A	SPME-GC-FID	10 µg/L	Performance
	70 µg/L	EPA 524.2 wide-bore capillary column	0.12 µg/L	Compliance
cis-DCE	N/A	SW-846 8260B	5 µg/L	Definitive confirmation
	N/A	SPME-GC-FID	10 µg/L	Performance
	100 µg/L	EPA 524.2 wide-bore capillary column	0.06 µg/L	Compliance
trans-DCE	N/A	SW-846 8260B	5 µg/L	Definitive confirmation
	NIA	SPME-GC-FID	10 µg/L	Performance
	2 µg/L	EPA 524.2 wide-bore capillary column	0.17 µg/L	Compliance

'able 3-3. (continued).

Analyte	Action Level[a]	Analytical Method	Method Detection Limit[b,c]	Monitoring Phase or Other Data Collection Activity
vinyl chloride	N/A	SW-846 8260B	5 µg/L	Definitive confirmation
	N/A	SPME-GC-FID	10µg/L	Performance
Radionuclides				
Tritium	N/A	Liquid scintillation counting	400 pCi/L	Performance
Electron Donor				
Lactate	N/A	Ion chromatography	0.3 mg/L	Performance
Acetate	N/A	GCIFID	5 mg/L	Performance
Propionate	NIA	GCIFID	5 mg/L	Performance
Butyrate	N/A	GCIFID	5 mg/L	Performance
COD	N/A	Hach[f] Method 10067	14mg/L	Performance
Redox Indicators				
Sulfate	N/A	Hach Method 8051	4.9 mg/L	Performance
Iron	N/A	Hach Method 8146	0.03 mg/L	Performance
pH	N/A	multi-parameter water quality instrument	0-14 units	Performance
ORP	N/A	multi-parameter water quality instrument	-999-+999 mV	Performance
Bioactivity Indicators				
Alkalinity	N/A	Hach Method 8203	10mg/L	Performance
Specific conductance	N/A	multi-parameter water quality instrument	0-100mS/cm	Performance
Dissolved Gases				
Ethene	N/A	GC-FID	1 µg/L	Performance
Ethane	N/A	GC-FID	1 µg/L	Performance
Methane	N/A	GC-FID	1 µg/L	Performance
Nutrients				
Ammonia nitrogen	NIA	Hach Method 10023 (for low range)	0.02 mg/L	Performance
		Hach Method 10031 (for high range)		
Orthophosphate	N/A	Hach Method 8048	0.05 mg/L	Performance

able **3-3.** (continued).

Analyte	Action Level[a]	Analytical Method	Method Detection Limit[b,c]	Monitoring Phase or Other Data Collection Activity

Method detection limits for: EPA method organics and radionuclides from DOE-ID (2002c), *QAPjPfor WasteArea Groups (WAGs) 1, 2, 3, 4, 5, 6, 7, 10 and Inactive Sites;* Hach methods from the Hach Manual; multiparameter water quality instrument parameters ranges reported are from the Minisonde 4a manual; electron donor and SPME organics from IRC organics analyst Cathy Rae, personal communication.

For purposes of this groundwater monitoring plan, "Detection limits must not exceed one tenth the risk-based or decision-based concentrations for the contaminants of concern (DOE-ID2002)." This applies to compliance monitoring only. Chloroethene action levels were divided by ten and compared to the MDL to determine appropriate analytical methods for compliance monitoring.

EPA, 1992, "Measurement of Purgeable Organic Compounds in Water by Capillary Column Gas Chromatography/Mass Spectrometry," Method 524.2, Revision 4, Environmental Monitoring Systems Laboratory, Office of Research and Development, U.S. Environmental Protection Agency, August 1992.

EPA, 1996, "Method 8260B: Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry(GC/MS)," ***Test Methods for Evaluating Solid Wastes Physical/Chemical Methods,*** SW-846, Environmental Protection Agency, URL: http://www.epa.gov/sw-846/8_series.htm#8_series ,current issue.

Hach Company, P.O. Box 389, Loveland, Colorado, 80539-0389, telephone: 800-227-4224.

3D = chemical oxygen demand
CE = dichloroethene
'A = Environmental Protection Agency
D = flame ionization detector
C = Gas Chromatography
DL = method detection limit
'A = not applicable
RP = Oxidation Reduction Potential
CE = Tetrachloroethene
'ME = Solid Phase Micro Extraction
CE = trichloroethene
OC = Volatile Oraanic Compound

3.2 Sampling Equipment and Procedures

Samples will be collected to implement the strategies summarized in Tables 3-1 and 3-2, per the *SAP* tables prepared prior to each sampling event by INEEL Sample and Analysis Management (SAM) under the direction of the ISB field team leader (FTL). Example *SAP* tables for each phase of operations and type of monitoring (performance or compliance) are presented in Appendix C. Sample collection activities will be performed by the FTL, Field Engineer, and sampling technicians. The general roles of each are defined in the ***Test Area North Operable Unit I-07B Final Groundwater Remedial Action Health and Safety Plan*** (INEEL 2002) (referred to as the TAN OU 1-07B HASP), while the specific responsibilities for each position are specified in the procedures referenced below.

Sampling for wells equipped with submersible pumps will be conducted using the equipment and techniques specified in Technical Procedure (TPR)-165, "Low-Flow Groundwater Sampling Procedure." Sampling for wells equipped with Flexible Liner Underground Technologies (FLUTe)[a] sampling systems will be sampled per TPR-6371, "FLUTe Water Sampling." Sampling for wells equipped with Barcad sampling systems will be sampled per TPR-1841, "Barcad Sampling." These procedures address training, equipment, instrument standardizations, purging, sampling, purge water management, decontamination and cleaning of equipment, and recordkeeping of this monitoring plan, and will be updated as required for the duration of monitoring. All sampling activities will be documented per Management Control Procedure (MCP)-1194, "Logbook Practices for ER and D&D&D Projects.''

a. Mention of specific products or manufacturers in this document implies neither endorsement, preference, nor disapproval by the U.S. Government, any of its agencies, or Bechtel BWXT Idaho, LLC, of the use of a specific product for any purpose.

Multi-parameter water quality instruments may be used for collecting purge parameter data during sampling and for in situ deployment in wells specified by the ISB Technical Lead for the duration of the remedy implementation. Multi-parameter water quality instruments will be deployed, operated, and maintained as specified in TPR–6247, "Operable Unit 1-07B Troll 9000 Water Quality Probe Operation and Maintenance" for Trolls and TPR-6248, "Operable Unit 1-07B Hydrolab Operation and Maintenance" for the Hydrolabs. These procedures address instrument standardization, programming and downloading, maintenance and repair, deployment and retrieval, and recordkeeping. They will be updated as required for the duration of monitoring.

Construction information for the OU 1-07B ISB monitoring wells is shown in Appendix D, and is maintained in the OU 1-07B project files and the INEEL Hydrogeologic Data Repository. The information includes name, location, material type, depth, screened or open interval, top of casing elevation, pump type, discharge hose or pipe dimension, sampling depth, and estimated purge volume for each well (current as of the date of publication). Portable equipment will be used to sample wells with no dedicated pump installed.

3.3 Waste Management

The sampling activities described above will generate potentially contaminated wipes, sample bottles, personal protective equipment (PPE), sample rinsates, and purge water. All wastes generated as a result of ISB groundwater monitoring activities will be managed in compliance with the requirements of the *Waste Management Plan for Test Area North Final Groundwater Remediation OU I-07B* (INEEL 1999).

3.4 Health and Safety

Health and safety program requirements are addressed in the TAN OU 1-07B Health and Safety Plan (HASP) (INEEL 2002). This HASP has been prepared to meet the Occupational Safety and Health Act **(OSHA)** Standard for Hazardous Waste Operations and Emergency Response (29 CFR 1926.65) and governs all work performed as a part of the ISB O&M (DOE-ID 2003b).

4. SAMPLE MANAGEMENT AND ANALYSIS

The ISB final remedial action groundwater monitoring program includes three analytical components: (1) onsite field analyses and measurements, (2) analyses performed at the INEEL Research Center (IRC), and **(3)** analyses performed at offsite laboratories. This section describes the protocols to be followed during all sample management (i.e., those activities immediately following sample collection) and analysis activities. The FTL is responsible for implementing all sample management protocols, and the Field Lab Lead (FLL) is responsible for implementing all sample analysis protocols.

4.1 Sample Management

4.1.1 Sample Designation and Sampling and Analysis Plan Tables

A character-based sample identification (ID) system determined by the Sample and Analysis Management *(SAM)* will be used to identify each sample with a unique ID code, which is provided by the SAM at the time the Sample and Analysis Plan *(SAP)* tables are prepared. Sampling and Analysis Plan tables will be used to record all pertinent information including monitoring locations, sample designations, media, dates, analysis types, and comments associated with each sample ID code. Example **SAP** tables for each monitoring phase are provided in Appendix C. In an effort to minimize *SAP* discrepancies, *SAP* tables will be prepared immediately prior to each sampling event and the completed *SAP* tables will be included in the pending ISB Periodic Report for the reporting period. The FTL is responsible for *SAP* table accuracy.

4.1.2 Sample Preservation and Preparation

Table 4-1 defines the analyses to be performed by the onsite field laboratory, IRC laboratory, and offsite laboratories. For each analyte listed, the container size and type, preservative, analytical method, and holding time is provided. Samples requiring 4°C preservation will be chilled in coolers containing frozen reusable ice immediately upon collection and maintained at a temperature ≤ 4°C prior to shipment to ensure adequate preservation.

Sample bottles will be preserved prior to sample collection for those samples requiring zero headspace (i.e., ethene/ethane/methane and VOCs analyzed offsite). Appropriate acid will be added (and the pH checked after sample collection) to obtain a pH between 1.6 and 2 for those samples requiring preservation at a $pH < 2$ that do not require zero headspace. Samples analyzed offsite will be handled and preserved per the governing SAM Task Order Statement (TOS) (TBD).

The priority indicated in Table 4-1 for field laboratory analyses is related to the holding times for those particular analyses. All of the field analyses will be performed per TPR-166, "In Situ Bioremediation Field Laboratory Procedure" within the stated holding time. Those with a priority of "1" will be analyzed as soon as possible after collection.

4.1.3 Chain of Custody

To maintain and document possession of samples shipped to a laboratory for analysis, chain of custody (COC) procedures will be followed per MCP-1192, "Chain of Custody and Sample Labeling for ER and D&D&D Projects," MCP-1193, "Handling and Shipping Samples for ER and D&D&D Projects," and the QAPjP (DOE-ID 2002). The purpose of the COC is to document the identity of the sample and its handling from the point of collection until laboratory analysis is complete. The COC record is a multiple copy form that serves as a written record of the sample handling. When a sample changes custody, those

Table 4-1. Sample collection and analysis requirements.

Analytes	Sample Container Size and Type	Preservative	Analytical Method	Holding Time	Comments
IRC Laboratory Analyses					
VOCs	Two glass 40-mL VOA vials	4°C	SPME-GC-FID	7 days	No headspace
Ethene/Ethane/Methane	Two glass 40-mL VOA vials	4°C and pH < 2 w/H_2SO_4	GC-FID	14 days	No headspace
Lactate	One glass 40-mL VOA vial	4°C	Ion chromatography	7 days	Sample filtered through 0.2 µm filter upon collection
Acetate/Propionate/Butyrate	One glass 40-mL VOA vial	4°C	GC/FID	7 days	Sample filtered through 0.2 µm filter upon collection; collected in same container as lactate
Field Laboratory Analyses (Priority)					
Iron (1)	250-ml HDPE	None	Hach[a] Method 8146	30 minutes	Must be analyzed immediately; collected in same container as sulfate, phosphate, and ammonia; no headspace
Phosphate (2)	250-mL HDPE	4°C	Hach Method 8048	24 hrs	Collected in same container as iron, ammonia, and sulfate
Alkalinity (3)	125-mL HDPE	4°C	Hach Method 8203	24 hrs	
Sulfate (4)	250-mL HDPE	4°C	Hach Method 8051	24 hrs	Collected in same container as iron, phosphate, and ammonia

Table 4-1. (continued).

Analytes	Sample Container Size and Type	Preservative	Analytical Method	Holding Time	Comments
Nitrogen, Ammonia, Low Range (5)	250-mL HDPE	4°C	Hach Method 10023	24 hrs	Collected in same container as iron, phosphate, and sulfate
Nitrogen, Ammonia, High Range (6)	250-mL HDPE	4°C	Hach Method 10031	24 hrs	Collected in same container as iron, phosphate, and sulfate
Chemical Oxygen Demand (7)	One glass 40-mL VOA vial	4°C	Hach Method 10067	28 days	Initial sample preparation within 1 hour of arrival at field laboratory (follows phosphate for priority)
Offsite Laboratory Analyses					
VOCs	Three glass 40-mL VOA vials	4°C and pH<2 w/H_2SO_4 (8260B) or HCl (524.2)	SW-846 8260B[b] or EPA 524.2[c] (see Table 3-2)	14 days	No headspace
Tritium	1-125 mL HDPE	None	Liquid Scintillation Counting	180 days	
Gamma Screen	1-540 mL HDPE	None	Gamma spectroscopy	N/A	Required for samples from TSF-05, TAN-25, -26, -31, and TAN-1859 prior to shipment offsite

a. Hach Company, P.O. Box 389, Loveland, Colorado, 80539-0389, telephone: 800-227-4224.

b. EPA, 1996, "Method 8260B: Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GUMS)," *Test Methods for Evaluating Solid Wastes Physical/Chemical Method?,* SW-846, Environmental Protection Agency, URL: http://www.epa.gov/sw-846/8_series.htm#8_series , current issue.

c. EPA, 1992, "Measurement of Purgeable Organic Compounds in Water by Capillary Column Gas Chromatography/Mass Spectrometry," Method 524.2, Revision 4, Environmental Monitoring Systems Laboratory, Office of Research and Development, U.S. Environmental Protection Agency, August 1992.

EPA = Environmental Protection Agency
GC/FID = gas chromatography/flame ionization detection
HDPE = high-density polyethylene
N/A = not applicable
SPME = solid phase micro extraction
TAN = Test Area North
TSF = Technical Support Facility
VOA = volatile-organic analysis
VOC = volatile organic compound

personnel relinquishing and receiving the sample shall sign a COC record. Each change of possession will be documented. The COC procedures will begin immediately after sample collection. The sample ID number, date, and time will be entered on the COC form the day of sample collection. Sample bottles will be stored in a secured area accessible only to the field team members. A COC will not be initiated for those samples that are analyzed onsite in the field laboratory unless specified by the FTL or FLL, since these samples will not leave the custody of the field team members.

4.1.4 Transportation of Samples

Samples will be transported in accordance with regulations issued by the Department of Transportation (49 CFR Parts 171 through 178) and EPA sample handling, packaging, and shipping methods (40 CFR 261.4[d] and [e]). All samples will be packaged in accordance with requirements set forth in MCP-1192 and the governing TOS.

4.1.5 Radiological Screening

Samples collected from wells TAN-25, TAN-26, TAN-31, TAN-1859, and TSF-05 must be surveyed using gamma spectroscopy prior to analysis or shipment offsite. Radioactivity in all other wells to be sampled has historically been below levels of concern. Samples collected from other wells may be surveyed using gamma spectroscopy under the direction of the Technical Lead, FTL, or Operations Supervisor.

4.2 Sample Analysis

Sample analysis will be conducted using three analytical components (i.e., the onsite field laboratory, the IRC laboratory, and SAM-appointed offsite laboratories) dependent upon holding time restrictions, analytical capabilities, and quality level requirements. Analytes and the analytical methods to be used for each of the three components are defined in Table 4-1. Quality assurance requirements associated with the activities taking place within each of the three components are described separately in Section 6. The onsite field laboratory, in addition to providing analytical resources, is also used for sample preparation activities in support of analyses to be conducted at both the IRC and offsite laboratories. A summary description of the laboratory activities is provided below.

4.2.1 Onsite Field Laboratory Activities

The field laboratory supports ISB project team activities for all three analytical components of the monitoring program. The field laboratory is the center for all onsite collection activities including field test kits and multi-parameter water quality instrument data (both in situ and purge data). These activities provide near real-time data for evaluating the performance of the **ISB** remedy. In addition, the field laboratory is used for coordinating sample delivery to the IRC and for sample shipment to offsite laboratories, as described in Sections 4.1.1 through 4.1.5. Specific activities that the field laboratory supports include colorimeter operation, digital titrator operation, gross alpha-beta counts, sample preservation, storage, and packing and shipping; multi-parameter water quality instrument deployment, maintenance, standardization, and downloading; and sample bottle preparation and administrative activities.

Field laboratory operations will be conducted by the FTL, FLL, and Field Lab Technicians. The general roles of each are defined in the HASP, while specific responsibilities are specified in the relevant procedure(s). Field laboratory operations and associated equipment are described in TPR-166, "In Situ Bioremediation Field Laboratory Procedure." Multi-parameter water quality instruments will be deployed, operated, and maintained as specified in TPR-6247, "Operable Unit 1-07B Troll 9000 Water

Quality Probe Operation and Maintenance" for Trolls, and TPR-6248, "Operable Unit 1-07B Hydrolab Operation and Maintenance" for the Hydrolabs. These procedures will be updated as required for the duration of monitoring.

4.2.2 INEEL Research Center Laboratory Activities

Analysts at the IRC laboratory analyze samples for chloroethene, ethene/ethane/methane (E/E/M), lactate, and organic acids using the methods listed in Table 4-1. IRC laboratory operations utilize one to two analysts in support of **ISB** groundwater monitoring operations. Details regarding analyses conducted at the IRC laboratory will be provided in the most recent "Statement of **Work** for TAN **ISB** Samples to be Analyzed at the IRC" (pending).

4.2.3 Offsite Laboratory Activities

Offsite laboratories analyze samples for chloroethenes and tritium using definitive methods. Specific requirements are defined in the TOS prepared by INEEL's SAM for each analytical services subcontract.

5. DATA MANAGEMENT AND REPORTING

This section provides an overview of the process used for entering, compiling, and storing data collected in support of the ISB remedy activities. The detailed steps of the data management process are documented in the OU 1-07B Data Management Plan (pending); a simplified diagram of the process is shown in Figure 5-1.

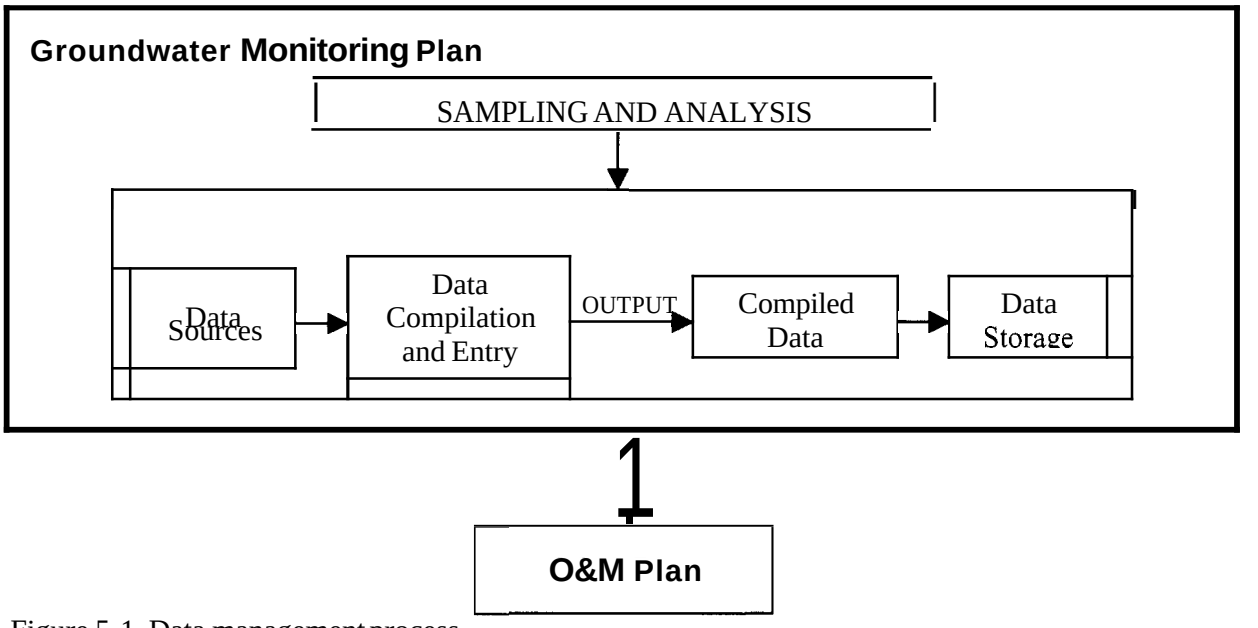


Figure 5-1. Data management process.

Data are obtained from the following sources:

- Field laboratory (logbooks)
- Multi-parameter water quality instruments (electronic files and purge log sheets)
- IRC Laboratory (electronic data files)
- Offsite laboratories (offsite data packages from SAM).

Upon receipt of data from these sources, data are compiled and entered into electronic spreadsheets or databases. The spreadsheets or databases are organized according to the data types presented above, updated with new data consistent with respective sampling frequencies, and posted to the OU 1-07B server. Once posted to the server, the completed spreadsheets or databases are used to evaluate data in the context of progress toward the objectives of the remedy, as described in detail in the ISB O&M Plan (DOE-ID 2003b).

Reporting requirements for ISB groundwater monitoring results are defined in the ISB RAWP (DOE-ID 2003a). All ISB groundwater monitoring information will be compiled in the ISB Periodic Report and will be provided to the Agencies. Information reported will include analytical results, SAP tables, trend charts, QA results, interpretations, and operational changes. The Periodic Report will

document progress of the ISB remedy toward meeting the performance criteria and remedial action objectives (RAOs), and shall support agency 5-year reviews.

Additionally, quality assured sampling results will be submitted to the Agencies as they become available, but no later than **120** days after sample collection. Non-quality assured data that support decision-making will be submitted as they become available. The formats for these submittals will be identified in the ISB Data Management TPR (TBD). Data will be submitted to the Agencies in both electronic and hardcopy formats, as appropriate.

Data management activities will be conducted by the FTL, FLL, Data Entry Technician, **SAM** contact, and Data Evaluation Lead per the direction of the ISB Technical Lead. Reporting will be primarily the responsibility of the Project Manager and the ISB Technical Lead. The general roles of each are defined in the ISB HASP (INEEL 2002), while specific responsibilities are defined in the OU 1-07B Data Management Plan (in preparation).

6. QUALITY ASSURANCE

This section presents or references requirements for QA, including field and laboratory QA types and frequencies, precision and accuracy, corrective actions, and reporting, for analyses performed in support of OU 1-07B ISB remedial action at the onsite field laboratory, the IRC laboratory, and offsite laboratories. Quality assurance will be implemented as specified in this plan, the QAPjP (DOE-ID 2002c), Plan (PLN) -694, "Environmental Restoration Program Management," and TPR-166, "In Situ Bioremediation Field Laboratory Procedure."

For purposes of this groundwater monitoring plan, laboratory QA measures are those checks that an analyst routinely runs to determine precision and accuracy of the analytical methods and equipment (method error), and they typically include blanks, standards, duplicates, standard reference materials (SRMs), and standard additions (matrix spikes). Field QA measures are sample types collected or prepared in the field during sampling and submitted to the laboratory to assess overall data quality of the sampling and analysis program (total measurement error). Field QA sample types include field blanks, trip blanks, and field duplicates. Compliance monitoring at TAN-28 and TAN-30A, and at TAN-1860 and TAN-1861, will be considered separate sampling events; one field blank, one field duplicate, and one trip blank will be collected and analyzed for each respective well pair per sampling event.

Performance evaluation (PE) samples may be added to the OU 1-07B ISB Remedial Action QA program at the discretion of the ISB Technical Lead or Project Manager. If implemented, the PE program will be administered by the Sample Management Office (SMO) with direction from the ISB Technical Lead regarding sample type, concentration ranges, frequency, and analytes for each performance period.

Data validation levels, as defined in the QAPjP, are identified in Section 6.3 for definitive offsite analyses only. Data from field laboratory or IRC analyses are not validated.

6.1 Field Laboratory

6.1.1 Laboratory and Field Quality Assurance

Laboratory and field QA for the onsite field laboratory includes analysis of field blanks, field duplicates, standards, and standard additions (matrix spikes). Frequencies for field laboratory QA measures are specified in Table 6-1. Procedures for preparing standards and standard additions, as well as precision and accuracy requirements and corrective actions, are described in TPR-166.

Table 6-1. Field lab quality assurance frequency for in situ bioremediation remedial action groundwater monitoring.

Sample Type	Frequency	Comments
Field duplicate	1 per 20 samples[a,b]	All samples analyzed at the field lab
Field blank	1 per 20 samples[a,b]	All samples analyzed at the field lab
Standard additions	1 per 20 samples	Sulfate, alkalinity, phosphate, and ammonia only
Standards	1 per day of sampling (COD=1/batch)	Iron, sulfate, phosphate, COD, and ammonia only

a. 1 sample for **all analytes per day if number** of **monitoring locations is <20**.
b. 1 **sample per round** for **compliance monitoring at TAN-28 and TAN-30A; and at TAN-1860 and TAN-1861**
COD = **chemical oxygen demand**
TAN = **Test Area** North

6.1.2 Reporting

Control charts will be prepared and maintained for each QA parameter and analyte. The QA results will be evaluated and compiled as described in the OU 1-07B Data Management Plan (pending). Laboratory QA results and corrective actions will be summarized and reported in the ISB Periodic Report (to be written when results are complete).

6.2 INEEL Research Center Laboratory

6.2.1 Laboratory and Field Quality Assurance

Laboratory and field QA for the IRC laboratory includes analysis of trip blanks, field blanks, field duplicates, standards, matrix spikes (standard additions), initial calibrations, continuing calibrations, and PE samples. Frequencies for all IRC field and laboratory QA measures are presented in Table 6-2. Precision and accuracy requirements for IRC QA measures, as well as corrective actions, will be presented in the most current "Statement of Work for TAN ISB Samples to be Analyzed at the IRC" (pending).

Table 6-2. INEEL Research Center lab quality assurance frequency for in situ bioremediation remedial action groundwater monitoring.

Sample Type	Frequency	Comments
Trip blank	1 per sample cooler	VOCs and E/E/M only
Field duplicate	1 per 20 samples[a,b]	All samples analyzed at the IRC
Field blank	1 per 20 samples[a,b]	All samples analyzed at the IRC
Matrix spike/matrix spike duplicate	1 per **20** samples	VOCs and E/E/M only
Initial calibration check	1 per each lot analyzed; 1 per day minimum	All samples analyzed at the IRC
Continuing calibration check	1 per 10 samples	All samples analyzed at the IRC
PE samples	Per direction from ISB Technical Lead	VOCs only

a. 1 sample for all analytes per day if number of monitoring locations is <20.
b. 1 sample per round for compliance monitoring at TAN-28 and -30A; and at TAN-1860 and TAN-1**861**
EIEIM = ethene/ethane/methane
INEEL = Idaho National Engineering and Environmental Laboratory
IRC = INEEL Research Center
ISB = in situ bioremediation
TAN = Test Area North
VOC = volatile organic compound

6.2.2 Reporting

INEEL Research Center QA results will be evaluated and compiled as described in the OU 1-07B Data Management Plan (pending). Control charts will be prepared and maintained for each QA parameter

and analyte. Internal QA results and corrective actions will be summarized and reported in the ISB Periodic Report (to be written when results are complete).

6.3 Offsite Laboratories

6.3.1 Laboratory and Field Quality Assurance

Laboratory QA for the offsite laboratories includes blanks, duplicates, standards, and standard additions (matrix spikes). Offsite laboratory QA requirements established in the QAPjP (DOE-ID 2002) are based on definitive data requirements (Table **6-3).** Field QA for the offsite laboratories includes field blanks, trip blanks, and field duplicates. Frequencies for field QA analyses are specified in Table **6-4.**

6.3.2 Corrective Actions

Corrective action requirements are established by the SAM in the TOS for the performing laboratory.

6.3.3 Reporting

Laboratory reporting requirements for offsite laboratory QA are established by the SAM in the TOS for the performing laboratory. Offsite laboratory QA results will be evaluated and compiled as described in the OU 1-07B Data Management Plan (pending), and will be summarized and reported in the ISB Periodic Report (to be written when results are complete).

6.3.4 Data Validation

Definitive data from offsite analyses will be validated to Level A, as specified in the QAPjP (DOE-ID 2002).

Table **6-3.** Off-site laboratory quality assurance requirements for definitive data.[a]

QA Parameter	Acceptable Range[b]	Parameter Calculated
Precision		
Duplicates	TCE: ±14%	Relative percent difference (RPD)
Accuracy		
Standards	TCE: 71-120%	% recovery
Matrix spikes	TCE: 71-120%	% recovery
Completeness		
Definitive confirmation	90%	% complete
Compliance monitoring	100%	% complete

a. As defined by the QAPjP (DOE-ID 2002).
b. Other analytes for **which definitive data** will **be collected have no** QC **requirements specified in the** QAPjP **(DOE-ID** 2002).
QA = quality assurance
QC = quality control
QAPjP = Quality Assurance Project Plan
TCE = trichloroethene

Table **6-4.** Field quality assurance frequencies for definitive data.

Sample Type	Frequency	Comments
Field duplicate	1 per 20 samples[a,b]	All offsite samples
Field blank	1 per 20 samples[a,b]	All offsite samples
Trip blanks	1 per sample cooler	Offsite VOCs only
Definitive confirmation	Semi-annual/annual performance sampling round	Offsite VOCs only

a. 1 sample for all analytes per day if number of monitoring locations is <20.
b. 1 sample per round for compliance monitoring at TAN-28 and -30A; and at TAN-1860 and TAN-1861.

TAN = Test Area North
VOC = volatile organic compound

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Appendix A

Agency Comments and Resolutions for the In Situ Bioremediation Groundwater Monitoring Plan

'able **A-1.** I **A** Region 3 comments on the In Sitt Bioremediation Groundwater Monitoring Pla

Comment No.	Page No.	Doc/Sect.	Comment	Resolution
EPA-1.	2	INEEL/EXT-2002-00779, Rev. 2 Figure 1-1	The "End of Remedial Action" requires definition, as "Institutional Controls" are a component of the remedial action.	Comment incorporated. The wording will be revised to "End of Active ISB RA," and Institutional Controls will be deleted from Figure 1-1. The criterion "RAOs met" will be added for Decision #4.
EPA-2.		INEEWEXT-2002-00779, Rev. 2 General	Given the nature of the hot spot, a geological cross section of the area within 250 ft downgradient and crossgradient of TSF-05 would be helpful.	Comment noted. The Site Conceptual Model Reports are referenced in Section 1.1, last paragraph, as sources for this type of information.
EPA-3.	21	INEEL/EXT-2002-00779, Rev. 2 Table 6-1	For this project, the field blank should be 1/day minimum and 1/20 if a large number of samples are collected in a day.	Comment incorporated.
EPA-4.	21	INEEL/EXT-2002-00779, Rev. 2 Table 6-1	Are any equipment rinsate blanks planned?	Comment noted. No equipment rinsates are plannec since all wells will have dedicated pumps and no decon between wells is required.
EPA-5.	21	INEEL/EXT-2002-00779, Rev. 2 Section 6.2.2	What about reporting to Agencies (e.g., submittal of sampling data in accordance with FFA/CO[a] Section 19.1)?	Comment incorporated. The GWMP Section 5 will be revised to state that quality assured data will be submitted as they become available, but no later than 120 days after sample collection; and that non-quality assured data supporting decision-making will be submitted as it becomes available; as per FFA/CO[a] Sections 19.1 and 19.2.
EPA-6.	22	INEEL/EXT-2002-00779, Rev. 2 Table 6-3	It would be helpful to further refine the definition of "definitive;" for example, are any data considered "critical" which require 100% completeness?	Comment incorporated. Compliance data will be stated to require 100% completeness.
EPA-7.	22	INEEL/EXT-2002-00779, Rev. 2 Section 6.3.3	What about reporting to Agencies (e.g., submittal of sampling data in accordance with FFA/CO[a] Section 19.1)?	Comment incorporated; please see the response to EPA Comment #5.

Comment No.	Page No.	Doc/Sect.	Comment	Resolution

EPA = Environmental Protection Agency
EXT = external (type of report designation)
FFA/CO = Federal Facility Agreement and Consent Order
GWMP = Groundwater Monitoring Plan
INEEL = Idaho National Engineering and Environmental Laboratory
ISB = in situ bioremediation
RA = remedial action
RAO = remedial action objective
TSF = Technical Support Facility

Table **A-2** DEQ co ments on the In Situ Bioremediation Groundwater Monitoring Plan.

Comment No.	Page No.	Section	Location	Comment	Resolution
IDEQ-1.	1	Section 1	4th Bullet, Last Sentence	To be consistent with the remainder of the document, this sentence should state that this phase of the operations would be complete when VOC concentrations are below MCLs.	Comment noted. As stated on p. **4** for Decision **4,** the compliance criteria for long-term operations, which will define when the active **ISB** RA is completed, will be specified in the **ISB** Remedial Action Report.
IDEQ-2.	**4**	Section 1	Decisions **1-4**	None of these decision points include evaluation of radionuclides, especially Sr-90 or **Cs-137**. Although the current thought is that these radionuclides will adhere to the natural substrate, this assumption must be verified through this monitoring plan.	These contaminants of concern will be added as a monitoring requirement for MNA covered under the ISB sampling regime. As noted in EPA-1, the requirements, goals, and objectives for radionuclides will be defined in the MNA Work Plan"
IDEQ-3.	**4**	Section 1	2nd Paragraph	We should identify in this document what types of data and how this data will fulfill other remedies' respective data needs.	Comment incorporated. The **ISB** RAWP[b] will include a crosswalk showing how performance monitoring/compliance monitoring (PM/CM) for each remedy component supports the overall remedy monitoring requirements, and thereby other remedy component requirements.
IDEQ-4.	*9*	Section **3**	Tables **3-1** and **3-2**	Applicable radionuclides need to be added to these tables.	Comment incorporated.
IDEQ-5.	**11**	Section **3.3**		As this paragraph currently reads, the purge water will be packaged and handled as hazardous waste. Either delete purge from the list of waste or state that purge water and developments may be treated through the NPTF and reiniected.	Comment incorporated. The text will be revised to read "...all wastes...will be managed in compliance with the Waste Management Plan...".[c]

Table A-2. (continue 1

Comment No.	Page No.	Section	Location	Comment	Resolution
IDEQ-6.	12	Section 3.1	Table 3-3	A Method Detection Limit (MDL) is presented for all constituents and analytical methods except for cis-DCE. Please provide an MDL to complete this table. If the annual definitive confirmation data is the final decision mechanism to determine compliance with MCLs or to be used as a risk base decision-making tool, the MDLs are too high. This is especially important considering a ±14% definitive data criteria for TCE, as per Table 6-2. An MDL of 3 or even 4 µg/L will eliminate a lot of future questions. The MCL for vinyl chloride is 2 µg/L; therefore, the MDL for Method **82608** must also be 2 µg/L or less. Add Sr-90 and Cs-137 to the radionuclide list.	a) Comment incorporated. b) Comment noted. The annual definitive confirmation data are not used for determining compliance with MCLs nor for risk assessment, but are used to upgrade the quality of the VOC SPME-GC-FID data to "screening with definitive confirmation" as per the QAPjP[d] definition. Therefore MCLs need not match MDLs. c) Comment incorporated, Sr-90 and Cs-137 will be added to the analyte list.
DEQ-7.	13	bid.		Please correct PH to pH, the standard designation. Specific conductivity is usually reported as microS/cm (µS/cm) and not as milliS/cm (mS/com). Please verify the units intended for this parameter and correct as needed.	a) Comment incorporated. b) millisiemens (mS) per cm are the correct units for the in situ water quality probes used.
DEQ-8.	17	Section 4.1.5		It may be worth noting potential wells that the FTL may identify for gamma spectrometry prior to shipment. One well that would be considered is TAN-37. Obviously, there are reasons to not make this identification but it is worth discussion between the Agencies.	Comment noted.
DEQ-9.	21	Section 6.1.1	Table 6-1	This table only calls for 5% duplicate sampling for the field laboratory. Justification is needed to use less than the 10% duplicate sampling called for in the site-wide QAPjP[a]. Please provide this justification or increase the number of duplicate samples.	Comment noted. The duplicate frequency of 1 per 20 samples (5%) is the minimum specified in Table 1-5 of the QAPjP[d]. Additionally, a minimum duplicate frequency of 1/day will be added.
DEQ-10.	21	Section 6.3.1		It is not clear from this description if the QAPjP[d] will be followed for the number of duplicate samples that will be collected and analyzed. It appears from Appendix A that the percentage is less than 10%, but greater than 20%. Please clarify the level of QA samples that will be collected and analyzed.	Comment noted. Please see response to IDHW Comment **#9.**

Table A-2. continued).

Comment No.	Page No.	Section	Location	Comment	Resolution
DEQ-11.	B-1	Appendix B		The values presented for "Sampling Depth" are not consistent with the depths presented for "Length of discharge line" and "Screened interval(s)." For instance, the sampling depth for TSF-05A is stated as 235 ft but the discharge line is 275 ft. TAN-25 is shown with a sampling depth of 257 ft but the discharge line is only 218 ft. Please verify the entries in this table and correct as needed. If there is a reason the numbers do not match, please provide a footnote to explain how the numbers work.	Comment incorporated.

. Orr, Brennon R., Joseph S. Rothermel, and Aran T. Armstrong, 2003, *Monitored Natural Attenuation Remedial Action Work Plan for Test Areu North Final Groundwater Remediation, Operable Init 1-07B,* DOE/ID-1 11055, Revision 0, U.S. Department of Energy Idaho Operations Office, June 2003.

, DOE-ID, 2003, In *Situ Bioremediation Remedial Action Work Plan for Test Areu North Final Groundwater Remediation, Operable Unit 1-07B*, DOEAD-11015, Revision 1, U. S. Department of Energy Idaho Operations Office, January 2003.

. INEEL, 1999, *Waste Management Plan for Test Areu North Final Groundwuter Remediation, OU 1-07B*, INEEWEXT-98-00267, Revision 4, Idaho National Engineering and Environmental Laboratory, April 1999.

. DOE-ID, 2002, *Quality Assurance Project Plan for Waste Areu Groups 1, 2, 3, 4, 5, 6, 7, 10, und Inactive Sites*, DOE/ID-10587, Revision 7, U.S. Department of Energy Idaho Operations Office, eptember 2002.

)CE = dichloroethene
:PA = Environmental Protection Agency
TL = field team leader
iC-FID = gas chromatography – flame ionization detector
DEQ = Idaho Department of Environmental Quality
DHW = Idaho Department of Health and Welfare
SB = in situ bioremediation
MCL = maximum contaminant level
MDL = method detection limit
MNA = monitored natural attenuation
NPTF = New Pump and Treat Facility
)A = quality assurance
)APjP = Quality Assurance Project Plan
A = remedial action
.AWP = Remedial Action Work Plan
PME = solid phase micro extraction
'AN = Test Area North
'CE = trichloroethene
'SF = Technical Support Facility
'OC = volatile organic compound

Appendix B

Agency Comments and Resolutions for the In Situ Bioremediation Groundwater Monitoring Plan

;he In Situ Bioremediation Groundwater Monitoring Pl in.

Comment No.	Page No.	Doc/Section	Comment	Resolution
EPA-1.	10	INEEL/EXT–2002-00779, Rev. 2 Table 3-2	There should be a footnote identifying that the long-term compliance monitoring sampling strategy will be submitted in the Remedial Action Report, a primary document.	Agree; footnote added.
EPA-2.	20	INEEL/EXT–2002-00779, Rev. 2 Section 5	Please include that the Agencies will be provided with sampling results in both written and electronic format (e.g., Excel spreadsheet)	Agree.

INEEL = Idaho National Engineering and Environmental Laboratory

Table **B-2.** IDEQ Comments for the In Situ Bioremediation Groundwater Monitoring Plan.

Comment No.	Page No.	Doc/Section	Comment	Resolution
IDEQ-I .	9	INEEL/EXT-2002-00779, Rev. 2 Section 3, Tables 3-1 & 3-2	Applicable radionuclides need to be added to these tables. Sr-90 and Cs-137 were added to Table 3-1, however, only for monitoring well TAN-29 on a quarterly basis. It appears to IDEQ that sampling a number of monitoring wells along the suspected axis of the plume will provide trend data, which will be much more useful than the proposed sampling routine.	A crosswalk table has been added to Section 2 of the ISB RAWP (Table 2-2),[a] which maps the different monitoring requirements to the remedial component for which it is applicable. TAN-29 monitoring has been added as a placeholder until the NPTF contingent/upgradient monitoring strategy is in place.
IDEQ-2.		INEEL/EXT-2002-00779, Rev. 2 Section **3,** Table 3-1	TAN-27's location near the outer edge of the plume makes it a valuable monitoring well. Whether inadvertently left out of Table 3-1 or not, it should be added.	Agree; comment incorporated.
IDEQ-3.		INEEL/EXT-2002-00779, Rev. 2 Appendix D, Table D-l	Some values presented for "Sampling Depth" are not consistent with the depths presented **for** "Length of discharge line" and "Screened interval(s)." Please verify the entries in this table and correct as needed. If there is a reason the numbers do not match, please provide a footnote to explain how the numbers work, as was done for TSF-05.1 Monitoring wells TSF-05A and TAN-25 were corrected; however, there are still several wells in the table where the sampling depth and discharge line length do not match, such as TAN-IOA.	Agree; comment incorporated.

a. **DOE-ID, 2003, In Situ Bioremediation Remedial Action Work Plan for Test Area North Final Groundwater Remediation, Operable Unit 1-07B, DOE/ID-11015, Revision 1, U. S. Department of Energy Idaho Operations Office, January 2003.**

EXT = external (report designation)
IDEQ = Idaho Department of Environmental Quality
INEEL = Idaho National Engineering and Environmental Laboratory
ISB = in situ bioremediation
NPTF = New Pump and Treat Facility
RAWP = Remedial Action Work Plan
TAN = Test Area North
TSF = Technical Support Facility

Appendix C

Example Sampling and Analysis Plan Tables

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

Plan Table Number: INTERIM_MONTHLY

SAF Number: INEEL/EXT-2002-00779

DRAFT

Date: 10/17/2002 Plan Table Revision: 0.0 Project: OU 1-07B ISB REMEDIAL ACTION GWM - INTERIM MONTHLY (PM) Project Manager: NELSON, L. O.

Sampler: Carroll, R. E.

SMO Contact: MSC-UMSR, D. B.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Required																
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C5	EG	E3	F9	R5	MB	IN	RB	VA	VE								
INM000	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TSF-05A (71)	235	1	1	1	1			1		1	1	1									
INM001	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TSF-05B (71)	270	1	1	1	1			1		1	1	1									
INM002	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-25 (1117)	215	1	1	1	1		1	1		1	1	1									
INM003	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-26 (1118)	389	1	1	1	1			1		1	1	1									
INM004	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-27 (1009)	235	1	1	1	1					1	1	1									
INM005	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-28 (1008)	240	1	1	1	1					1	1		1								
INM006	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-29 (1010)	253	1	1	1	1					1	1	1									
INM007	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-30A (1012)	310	1	1	1	1					1	1	1									
INM008	REG/QC	GROUND WATER	DUP		/ /	TAN	MONITORING WELL	TAN-31 (1219)	258	2	2	2	2			1		2	2	2									
INM009	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37A (1183)	240	1	1	1	1					1	1	1									
INM010	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37B (1183)	272	1	1	1		1				1	1	1									
INM011	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37C (1183)	375	1	1	1	1				1	1	1	1									
INM012	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-10A (346)	233	1	1	1	1					1	1	1									
INM013	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-02 (336)	241	1	1	1	1					1	1	1									
INM014	QC	GROUND WATER	FBLK		/ /	TAN	FIELD BLANK	QC	NA	1	1	1	1					1	1	1									
INM015	QC	GROUND WATER	TBLK		/ /	TAN	TRIP BLANK	QC	NA				2							2									

The sampling activity displayed on this table represents the first six characters of the sample identification number.

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT1: Alkalinity

AT2: Isotopic Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethane/Ethene/Methane

AT5: Ethane/Ethene/Methane - MB/MB0

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Microbiological Analysis

AT9: Propionate/Butyrate/Acetate/Lactate

AT10: Tritium

AT11: VOCs (TAL)

AT12: VOCs (TAL) - MB/MB0

AT13:

AT14:

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Isotopic Suite:

Isotopic Suite #1: Sulfate, Iron (Inorganic Analytes)

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Field Tests - Analysis Suite #1, alkalinity, and COD

Samples will be sent to IRC except tritium which will be shipped to an off-site lab

Field Standard Addition will only be collected in months when a lactate injection has not been done.

TAN-37C microbiological sample is for an LDRD project at IRC

Contingencies:

Plan Table Number: INTERIM_MONTHLY

SAP Number: INEEL/EXT-2002-00779

DRAFT

Sampler: Carroll, R. E.

Date: 10/17/2002 Plan Table Revision: 0.0 Project: OU 1-07B ISB REMEDIAL ACTION QAPP - INTERIM MONTHLY (PM) Project Manager: NELSON, L. O. SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	SA	C6	EC	E3	F6	R5	MB	1N	R8	VA	VE								

The sampling activity displayed on this table represents the first six characters of the sample identification number.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethane/Ethene/Methane

AT5: Ethane/Ethene/Methane - MS/MSD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Microbiological Analysis

AT9: Propionate/Butyrate/Acetate/Lactate

AT10: Tritium

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT11: VOCs (TAL)

AT12: VOCs (TAL) - MS/MSD

AT13:

AT14:

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Field Tests - Analysis Suite #1, alkalinity, and COD

Samples will be sent to IRC except tritium which will be shipped to an off-site lab

Field Standard Addition will only be collected in months when a isotope injection has not been done -

TAN-37C microbiological sample is for an LDRD project at IRC

Analysis Suites:

Analysis Suite #1: Sulfate, Iron (Inorganic Analysis)

Contingencies:

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

Plan Table Number: INTERIM_QUARTER

SAP Number: INEEL/EXT-2002-00778

DRAFT

Date: 10/17/2002 Plan Table Revision: 0.0 Project: OU 1-07B ISB REMEDIAL ACTION GWM - INTERIM QUARTERLY (PM) Project Manager: NELSON, L. O.

Sampler: Carroll, R. E.

Contact: KIRCHNER, D. R

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																				
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C6	EG	E3	F9	R5	R4	MB	1N	R9	R8	VA	VE						
IN9000	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TSF-05A (71)	235	1	1	1	2			1			1		1	2							
IN9001	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TSF-05B (71)	270	1	1	1	2			1			1		1	2							
IN9002	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-25 (1117)	218	1	1	1	2			1			1		1	2							
IN9003	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-26 (1116)	389	1	1	1	2			1			1		1	2							
IN9004	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-27 (1006)	235	1	1	1	2						1		1	2							
IN9005	REG/QC	GROUND WATER	DUP		/ /	TAN	MONITORING WELL	TAN-28 (1008)	240	2	2	2	4						2		2	4							
IN9006	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-29 (1010)	253	1	1	1	2				1		1	1	1	2							
IN9007	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-30A (1012)	310	1	1	1	2						1		1		2						
IN9008	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-31 (1219)	256	1	1	1	2			1			1		1	2							
IN9009	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37A (1163)	240	1	1	1		2					1		1	2							
IN9010	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37B (1163)	272	1	1	1	2						1		1	2							
IN9011	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37C (1163)	375	1	1	1	2					1	1		1	2							
IN9012	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-10A (348)	233	1	1	1	2		1				1		1	2							
IN9013	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-02 (339)	241	1	1	1	2						1		1	2							
IN9014	QC	GROUND WATER	FBLK		/ /	TAN	FIELD BLANK	QC	NA	1	1	1	2				1		1	1	1	2							
IN9015	QC	GROUND WATER	TBLK		/ /	TAN	TRIP BLANK	QC	NA				3									3							

e sampling activity displayed on this table represents the first six characters of the sample identification number. The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

'1: Alkalinity

2: Analysis Suite #1

3: Chemical Oxygen Demand

4: Ethane/Ethene/Methane

5: Ethane/Ethene/Methane - MB/MBD

6: Field Standard Addition - QC

7: Gamma Screen

8: Gamma Spec

9: Microbiological Analysis

10: Propionate/Butyrate/Acetate/Lactate

lysis Suites:

lysis Suite #1: Sulfate, Iron (Inorganic Analysis)

AT11: Sr-90

AT12: Tritium

AT13: VOCs (TAL)

AT14: VOCs (TAL) - MS/MSD

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Contingencies:

CComments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

FField Tests - Analysis Suite #1, alkalinity, and COD

SSpill samples will be collected at all locations for VOCs (TAL) and Ethane/Ethene/Methane analyses

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

Plan Table Number: INTERIM_QUARTER

SAP Number: INEEL/EXT-2002-00778

Date: 10/17/2002 Plan Table Revision: 0.0 Project: OU 1-07B ISB REMEDIAL ACTION GWM - INTERM QUARTERLY (PM) Project Manager: NELSON, L. O.

Sampler: Carroll, R. E.

DRAFT

Sample Description					Planned Date	Sample Location				Enter Analysis Types (AT) and Quantity Requested																					
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method		Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	OS	EG	E3	F6	R5	R4	MB	IN	RB	R6	VA	VE						

The sampling activity displayed on this table represents the first six characters of the sample identification number.

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethane/Ethene/Methane

AT5: Ethane/Ethene/Methane - MS/MSD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Gamma Spec

AT9: Microbiological Analysis

AT10: Propionate/Butyrate/Acetate/Lactate

AT11: Sr-90

AT12: Tritium

AT13: VOCs (TAL)

AT14: VOCs (TAL) - MS/MSD

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Field Tests - Analysis Suite #1, alkalinity, and COD

Split samples will be collected at all locations for VOCs (TAL) and Ethane/Ethene/Methane analyses

Analysis Suites:

Analysis Suite #1: Sulfate, Iron (Inorganic Analysis)

Contingencies:

Plan Table Number: INTERIM_SEMI

SAP Number: INEEL/EXT-2002-00778

DRAFT

Sampler: Carroll, R. E.

Date: 10/17/2002 Plan Table Revision: 0.0 Project: OU 1-07B ISB REMEDIAL ACTION GWM - INTERIM SEMIANNUAL (PM) Project Manager: NELSON, L. O. SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																				
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	CS	EG	E3	F6	R5	R4	MB	1N	R8	R6	VA	VE						
IN9016	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TSF-05A (71)	235	1	1	1	2			1			1		1	2							
IN9017	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TSF-05B (71)	270	1	1	1	2			1			1		1	2							
IN9018	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-25 (1117)	218	1	1	1	2			1			1		1	2							
IN9019	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-26 (1118)	300	1	1	1	2			1			1		1	2							
IN9020	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-27 (1009)	235	1	1	1	2		1				1		1	2							
IN9021	REG/QC	GROUND WATER	DUP		/ /	TAN	MONITORING WELL	TAN-28 (1008)	240	2	2	2	4						2		2	4							
IN9022	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-29 (1010)	253	1	1	1	2				1		1	1	1	2							
IN9023	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-30A (1012)	310	1	1	1	2						1		1		2						
IN9024	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-31 (1219)	268	1	1	1	2			1			1		1	2							
IN9025	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37A (1163)	240	1	1	1		2					1		1	2							
IN9026	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37B (1163)	272	1	1	1	2						1		1	2							
IN9027	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37C (1163)	375	1	1	1	2					1	1		1	2							
IN9028	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-10A (346)	233	1	1	1	2						1		1	2							
IN9029	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-D2 (939)	241	1	1	1	2						1		1	2							
IN9030	QC	GROUND WATER	FBLK		/ /	TAN	FIELD BLANK	QC	NA	1	1	1	2				1		1	1	1	2							
IN9031	QC	GROUND WATER	TBLK		/ /	TAN	TRIP BLANK	QC	NA				3									3							

The sampling activity displayed on this table represents the first six characters of the sample identification number.

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethane/Ethene/Methane

AT5: Ethane/Ethene/Methane - MS/MSD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Gamma Spec

AT9: Microbiological Analysis

AT10: Propionate/Butyrate/Acetate/Lactate

AT11: Sr-90

AT12: Tritium

AT13: VOCs (TAL)

AT14: VOCs (TAL) - MS/MSD

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Field Tests - Analysis Suite #1, alkalinity, and COD

Analysis Suite:

Analysis Suite #1: Ammonia Nitrogen, Phosphate, Sulfate, Iron (Inorganic Analysis)

Plan Table Number: INTERIM_SEMI

SAP Number: INEEL/EXT-2002-00779

DRAFT

Sampler: Carroll, R. E.

Date: 10/17/2002 Plan Table Revision: 0.0 Project: OU 1-07B ISB REMEDIAL ACTION GWM - INTERIM SEMIANNUAL (PM) Project Manager: NELSON, L. O. SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																			
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C5	EG	E3	F6	R5	R4	MB	1N	R9	R8	VA	VE						

The sampling activity displayed on this table represents the first six characters of the sample identification number.

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethene/Ethane/Methane

AT5: Ethene/Ethane/Methane - MS/MSD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Gamma Spec

AT9: Microbiological Analysis

AT10: Propionate/Butyrate/Acetate/Lactate

AT11: Sr-90

AT12: Tritium

AT13: VOCs (TAL)

AT14: VOCs (TAL) - MS/MSD

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Field Tests - Analysis Suite #1, alkalinity, and COD

Split samples will be collected at all locations for VOCs (TAL) and Ethene/Ethane/Methane analyses.

Analysis Suites:

Analysis Suite #1: Ammonia Nitrogen, Phosphate, Sulfate, Iron (Inorganic Analysis)

Contingencies:

Plan Table Number: INTERIM_ANNUAL

SAP Number: INEEL/EXT-2002-00779

DRAFT

Sampler: Carroll, R. E.

Date: 11/04/2002 Plan Table Revision: 1.0 Project: OU 1-07B ISB REMEDIAL ACTION GWM - INTERIM ANNUAL (PM) Project Manager: NELSON, L. O. SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																	
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C5	EG	E3	F8	R5	R4	GA	1N	R8	R8	VA	VE						
IAN000	REG	GROUND WATER	GRAB		11/04/2002	TAN	MONITORING WELL	TSF-05A (71)	235	1	1	1	2			1		1	1		1	2							
IAN001	REG	GROUND WATER	GRAB		11/04/2002	TAN	MONITORING WELL	TSF-05B (71)	270	1	1	1	2			1		1	1		1	2							
IAN002	REG	GROUND WATER	GRAB		11/04/2002	TAN	MONITORING WELL	TAN-25 (1117)	218	1	1	1	2			1		1	1		1	2							
IAN003	REG	GROUND WATER	GRAB		11/04/2002	TAN	MONITORING WELL	TAN-26 (1118)	388	1	1	1	2			1		1	1		1	2							
IAN004	REG	GROUND WATER	GRAB		11/04/2002	TAN	MONITORING WELL	TAN-27 (1000)	235	1	1	1	2						1		1	2							
IAN005	REG/QC	GROUND WATER	DUP		11/04/2002	TAN	MONITORING WELL	TAN-28 (1006)	240	2	2	2	4					2	2		2	4							
IAN006	REG	GROUND WATER	GRAB		11/04/2002	TAN	MONITORING WELL	TAN-29 (1010)	253	1	1	1	2				1	1	1	1	1	2							
IAN007	REG	GROUND WATER	GRAB		11/04/2002	TAN	MONITORING WELL	TAN-30A (1012)	310	1	1	1	2		1				1		1	2							
IAN008	REG	GROUND WATER	GRAB		11/04/2002	TAN	MONITORING WELL	TAN-31 (1219)	258	1	1	1	2			1		1	1		1		2						
IAN009	REG	GROUND WATER	GRAB		11/04/2002	TAN	MONITORING WELL	TAN-37A (1163)	240	1	1	1	2						1		1	2							
IAN010	REG	GROUND WATER	GRAB		11/04/2002	TAN	MONITORING WELL	TAN-37B (1163)	272	1	1	1		2					1		1	2							
IAN011	REG	GROUND WATER	GRAB		11/04/2002	TAN	MONITORING WELL	TAN-37C (1163)	375	1	1	1	2						1		1	2							
IAN012	REG	GROUND WATER	GRAB		11/04/2002	TAN	MONITORING WELL	TAN-10A (348)	233	1	1	1	2						1		1	2							
IAN013	REG	GROUND WATER	GRAB		11/04/2002	TAN	MONITORING WELL	TAN-02 (339)	241	1	1	1	2						1		1	2							
IAN014	QC	WATER	FBLK		11/04/2002	TAN	FIELD BLANK	QC	NA	1	1	1	2				1	1	1	1	1	2							
IAN015	QC	WATER	TBLK		11/04/2002	TAN	TRIP BLANK	QC	NA				3									3							

The sampling activity displayed on this table represents the first six characters of the sample identification number.

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethane/Ethene/Methane

AT5: Ethane/Ethene/Methane - MS/MSD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Gamma Spec

AT9: Gross Alpha

AT10: Propionate/Butyrate/Acetate/Lactate

AT11: Sr-90

AT12: Tritium

AT13: VOCs (TAL)

AT14: VOCs (TAL) - MS/MSD

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Field Tests - Analysis Suite #1, alkalinity, COD

Split samples will be collected at all locations for VOCs (TAL) and Ethane/Ethene/Methane analyses

Analysis Suites:

Analysis Suite #1: Ammonia Nitrogen, Phosphate, Sulfate, Iron (Inorganic Analysis)

Contingencies:

Plan Table Number: INTERIM_ANNUAL

DRAFT

SAP Number: INEEL/EXT-2002-00778

Sampler: Carroll, R. E.

Date: 11/04/2002 Plan Table Revision: 1.0 Project: OU 1-07B ISB REMEDIAL ACTION GWM - INTERIM ANNUAL (PM) Project Manager: NELSON, L. O. SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																					
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C5	EG	E3	F6	R5	R4	GA	IN	R9	R8	VA	VE						

The sampling activity displayed on this table represents the first six characters of the sample identification number.

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethane/Ethene/Methane

AT5: Ethane/Ethene/Methane - MB/MSD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Gamma Spec

AT9: Gross Alpha

AT10: Propionate/Butyrate/Acetate/Lactate

AT11: Sr-90

AT12: Tritium

AT13: VOCs (TAL)

AT14: VOCs (TAL) - MB/MSD

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Field Tests - Analysis Suite #1, alkalinity, COD

SpR samples will be collected at all locations for VOCs (TAL) and Ethane/Ethene/Methane analyses

Analysis Suites:

Analysis Suite #1: Ammonia Nitrogen, Phosphate, Sulfide, Iron (Inorganic Analysis)

Contingencies:

Plan Table Number: INITIAL_MONTHLY

SAP Number: INEEL/EXT-2002-00779

DRAFT

Date: 10/29/2002 Plan Table Revision: 0.0 Project: OU 1-07B ISB REMEDIAL ACTION GW - INITIAL MONTHLY IPM8 Project Manager: MEL SCHOLL, C.

Sampler: Carroll, D. E

QA Contact: RICHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																				
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C6	EG	E3	F8	R5	1N	R6	VA	VE									
IOM009	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TSF-05A (71)	235	1	1	1	1			1	1	1	1										
IOM001	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TSF-05B (71)	270	1	1	1	1			1	1	1	1										
IOM002	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-29 (1117)	218	1	1	1	1			1	1	1	1										
IOM003	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-26 (1118)	380	1	1	1	1		1	1	1	1	1										
IOM004	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-27 (1009)	235	1	1	1	1				1	1	1										
IOM005	REG/QC	GROUND WATER	DUP		/ /	TAN	MONITORING WELL	TAN-26 (1008)	240	2	2	2	2				2	2	2										
IOM006	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-28 (1010)	253	1	1	1	1				1	1	1										
IOM007	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-30A (1012)	310	1	1	1	1				1	1		1									
IOM008	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-31 (1218)	298	1	1	1	1			1	1	1	1										
IOM009	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37A (1163)	240	1	1	1		1			1	1	1										
IOM010	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37B (1163)	272	1	1	1	1				1	1	1										
IOM011	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37C (1163)	375	1	1	1	1				1	1	1										
IOM012	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-10A (348)	233	1	1	1	1				1	1	1										
IOM013	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-02 (339)	241	1	1	1	1				1	1	1										
IOM014	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	PMW-1	TBD	1	1	1	1				1	1	1										
IOM015	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	PMW-2	TBD	1	1	1	1				1	1	1										
IOM016	QC	GROUND WATER	FBLK		/ /	TAN	FIELD BLANK	QC	NA	1	1	1	1				1	1	1										

The sampling activity displayed on this table represents the first six characters of the sample identification number.

The complete sample identification number (10 char → [redacted] field guide ← forms and sample)

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethane/Ethene/Methane

AT5: Ethane/Ethene/Methane - MS/MSD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Propionate/Butyrate/Acetate/Lactate

AT9: Tritium

AT10: VOCs (TAL)

Analysis Suites:

Analysis Suite #1: Sulfate, Iron (Inorganic Analysis)

AT11: VOCs (TAL) - MS/MSD

AT12:

AT13:

AT14:

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Contingencies:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Field Tests - Analysis Suite #1, Alkalinity, and Chemical Oxygen Demand

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

Plan Table Number: INITIAL_MONTHLY

SAP Number: INEEL/EXT-2002-00779

Date: 10/29/2002 Plan Table Revision: 0.0 Project: OU 1-07B IRA REMEDIAL ACTION GW - INITIAL MONTHLY (PM) Project Manager: NELSON, L. O.

DRAFT

Sampler: Carroll, R.E.

SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																	
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C6	EG	E3	F8	R5	1N	R8	WA	VE									
IOM017	QC	GROUND WATER	TBLK		/ /	TAN	TRIP BLANK	QC	NA				2						2										

The sampling activity displayed on this table represents the first six characters of the sample identification number.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethane/Ethene/Methane

AT5: Ethane/Ethene/Methane - MS/MSD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Propionate/Butyrate/Acetate/Lactate

AT9: Tritium

AT10: VOCs (TAL)

Analysis Suites:

Analysis Suite #1: Sulfate, Iron (Inorganic Analysis)

Th

AT

AT

AT

AT

AT

AT16:

AT17:

AT18:

AT19:

AT20:

Contingencies:

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

Plan Table Number: INITIAL_QRTLY

SAP Number: INEEL/EXT-2002-00779

DRAFT

Date: 11/04/2002 Plan Table Revision: 0.0 Project: OU 1-07B ISB REMEDIAL ACTION GW - INITIAL QUARTERLY (PM) Project Manager: NELSON, L. O.

Sampler: Carroll, R. E.

SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																				
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C5	EQ	E3	F6	R5	R4	1N	R8	R8	VA	VE							
IQT000	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TSF-05A (71)	235	1	1	1	2			1		1		1	2								
IQT001	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TSF-05B (71)	270	1	1	1	2			1		1		1	2								
IQT002	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-26 (1117)	218	1	1	1	2			1		1		1	2								
IQT003	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-26 (1118)	388	1	1	1	2		1	1		1		1	2								
IQT004	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-27 (1009)	235	1	1	1		2				1		1	2								
IQT005	REG/QC	GROUND WATER	DUP		/ /	TAN	MONITORING WELL	TAN-28 (1008)	240	2	2	2	4					2		2	4								
IQT006	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-29 (1010)	253	1	1	1	2				1	1	1	1	2								
IQT007	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-30A (1012)	310	1	1	1	2					1		1	2								
IQT008	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-31 (1219)	258	1	1	1	2			1		1		1	2								
IQT009	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37A (1163)	240	1	1	1	2					1		1	2								
IQT010	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37B (1163)	272	1	1	1	2					1		1	2								
IQT011	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37C (1163)	375	1	1	1	2					1		1	2								
IQT012	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-10A (348)	233	1	1	1	2					1		1		2							
IQT013	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-02 (339)	241	1	1	1	2					1		1	2								
IQT014	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	PMW-1	NA	1	1	1	2					1		1	2								
IQT015	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	PMW-2	NA	1	1	1	2					1		1	2								
IQT016	QC	GROUND WATER	FBLK		/ /	TAN	FIELD BLANK	QC	NA	1	1	1	2				1	1	1	1	2								

The sampling activity displayed on this table represents the first six characters of the sample identification number.

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethane/Ethene/Methane

AT5: Ethane/Ethene/Methane - MS/MSD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Gamma Spec

AT9: Propionate/Butyrate/Acetate/Lactate

AT10: Sr-90

AT11: Tritium

AT12: VOCs (TAL)

AT13: VOCs (TAL) - MS/MSD

AT14:

AT15:

AT16:

AT17:

A

AT19:

AT20:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Split samples for VOCs (TAL) and Ethane/Ethene/Methane analyses will be collected. One set will go to IRC and the other to the off-site laboratory

Field Tests - Analysis Suite #1, Alkalinity, and Chemical Oxygen Demand

Analysis Suite:

Analysis Suite #1: Sulfate, Iron (Inorganic Analysis)

Contingencies:

Plan Table Number: INITIAL_QRTLY

SAP Number: INEEL/EXT-2002-00779

DRAFT

Sampler: Carroll, R. E.

Date: 11/04/2002 Plan Table Revision: 0.0 Project: OU 1-07B ISB REMEDIAL ACTION GW - INITIAL QUARTERLY (PM) Project Manager: NELSON, L. O. SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																				
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	CS	EG	E3	FB	R5	R4	1N	RB	R8	VA	VE							
IQTD17	QC	GROUND WATER	TBLK		/ /	TAN	TRIP BLANK	QC	NA				3								3								

The sampling activity displayed on this table represents the first six characters of the sample identification number.

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethane/Ethene/Methane

AT5: Ethane/Ethene/Methane - MB/MSD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Gamma Spec

AT9: Propionate/Butyrate/Acetate/Lactate

AT10: Sr-90

AT11: Tritium

AT12: VOCs (TAL)

AT13: VOCs (TAL) - MB/MSD

AT14:

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Split samples for VOCs (TAL) and Ethane/Ethene/Methane analyses will be collected. One set will go to IRC and the other to the off-site laboratory.

Field Tests - Analysis Suite #1, Alkalinity, and Chemical Oxygen Demand

Analysis Suites:

Analysis Suite #1: Sulfide, Iron (Inorganic Analysis)

Contingencies:

Plan Table Number: INITIAL_SEMI

SAP Number: INEEL/EXT-2002-00779

DRAFT

Date: 11/04/2002 Plan Table Revision: 0.0 Project: OU 1-07B ISB REMEDIAL ACTION GW - INITIAL SEMIANNUAL (PM) Project Manager: NELSON, L. O. Sampler: [redacted] E

SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																					
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	CS	EG	E3	F8	R5	R4	1N	R8	R8	VA	VE							
IQ8000	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TSF-05A (71)	236	1	1	1	2		1	1		1		1	2									
IQ8001	D	GROUND WATER	[redacted]		/ /	TAN	MONITORING WELL	TSF-05B (71)	270	1	1	1	2			1		1		1	2									
IQ8002	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-25 (1117)	216	1	1	1	2			1		1		1	2									
IQ8003	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-26 (1118)	380	1	1	1	2			1		1		1	2									
IQ8004	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-27 (1009)	235	1	1	1	2					1		1	2									
IQ8005	REG/QC	GROUND WATER	DUP		/ /	TAN	MONITORING WELL	TAN-28 (1008)	240	2	2	2	4					2		2	4									
IQ8006	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-29 (1010)	253	1	1	1	2				1	1	1	1	2									
IQ8007	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-30A (1012)	218	1	1	1	2					1		1		2								
IQ8008	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-31 (1219)	256	1	1	1	2			1		1		1	2									
IQ8009	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37A (1163)	240	1	1	1	2					1		1	2									
IQ8010	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37B (1163)	272	1	1	1	2					1		1	2									
IQ8011	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37C (1163)	375	1	1	1		2				1		1	2									
IQ8012	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-10A (348)	233	1	1	1	2					1		1	2									
IQ8013	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-02 (339)	241	1	1	1	2					1		1	2									
IQ8014	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	PMW-1	NA	1	1	1	2					1		1	2									
IQ8015	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	PMW-2	NA	1	1	1	2					1		1	2									
IQ8016	QC	GROUND WATER	FBLK		/ /	TAN	FIELD BLANK	QC	NA	1	1	1	2				1	1	1	1	2									

The sampling activity displayed on this table represents the first six characters of the sample identification number.

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethane/Ethene/Methane

AT5: Ethane/Ethene/Methane - MS/MSD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: [illegible]ma Spec

AT9: Propionate/Butyrate/Acetate/Lactate

AT10: Sr-90

AT11: Tritium

AT12: VOCs (TAL)

AT13: VOCs (TAL) - MS/MSD

AT14:

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Split samples for VOCs (TAL) and Ethane/Ethene/Methane analyses will be collected. One set will go to IRC and the other to the off-site laboratory.

Field Tests - Analysis Suite #1, Alkalinity, and Chemical Oxygen Demand

Analysis Suites:

Analysis Suite #1: Ammonia Nitrogen, Phosphate, Sulfate, Iron (Inorganic Analysis)

Contingencies:

Plan Table Number: INITIAL_SEMI

SAP Number: INEEL/EXT-2002-00779

DRAFT

Sampler: Carroll, R. E.

Date: 11/04/2002 Plan Table Revision: 0.0 Project: OU 1-07B ISB REMEDIAL ACTION GW - INITIAL SEMIANNUAL (PM) Project Manager: NELSON, L. O. SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																				
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C5	EQ	E3	F9	R5	R4	1N	R8	R9	VA	VE							
IQ8017	QC	GROUND WATER	TBLK		/ /	TAN	TRIP BLANK	QC	NA				3								3								

The sampling activity displayed on this table represents the first six characters of the sample identification number.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethane/Ethene/Methane

AT5: Ethane/Ethene/Methane - MM/MSD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Gamma Spec

AT9: Propionate/Butyrate/Acetate/Lactate

AT10: Sr-90

The complete sample identification number (16 characters) will appear on field guidance forms and sample labels.

AT11: Tritium

AT12: VOCs (TAL)

AT13: VOCs (TAL) - MM/MSD

AT14:

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Split samples for VOCs (TAL) and Ethane/Ethene/Methane analyses will be collected. One set will go to RIC and the other to the off-site laboratory.

Field Tests - Analysis Suite #1, Alkalinity, and Chemical Oxygen Demand

Analysis Suites:

Analysis Suite #1: Ammonia Nitrogen, Phosphate, Sulfate, Iron (Inorganic Analysis)

Contingencies:

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

Plan Table Number: INITIAL_ANNUAL

SAP Number: INEEL/EXT-2002-00779

DRAFT

Date: 11/04/2002 Plan Table Revision: 0.0 Project: OU 1-07B ISB REMEDIAL ACTION GW - INITIAL ANNUAL (PM) Project Manager: NELSON, L. O.

Sampler:

SMO Contact:

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																				
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C8	EG	E3	F8	R5	R4	GA	1N	R8	R6	VA	VE						
IAN016	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TSF-06A (71)	235	1	1	1	2			1		1	1		1	2							
IAN017	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TSF-06B (71)	270	1	1	1	2			1		1	1		1	2							
IAN018	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-25 (1117)	218	1	1	1	2			1		1	1		1		2						
IAN019	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-26 (1118)	308	1	1	1	2			1		1	1		1	2							
IAN020	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-27 (1008)	235	1	1	1	2						1		1	2							
IAN021	REG/QC	GROUND WATER	DUP		/ /	TAN	MONITORING WELL	TAN-28 (1008)	240	2	2	2	4					2	2		2	4							
IAN022	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-29 (1010)	253	1	1	1	2				1	1	1	1	1	2							
IAN023	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-30A (1012)	310	1	1	1	2						1		1	2							
IAN024	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-31 (1219)	258	1	1	1		2		1		1	1		1	2							
IAN025	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37A (1163)	240	1	1	1	2						1		1	2							
IAN026	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37B (1163)	272	1	1	1	2						1		1	2							
IAN027	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37C (1163)	375	1	1	1	2						1		1	2							
IAN028	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-90A (348)	233	1	1	1	2						1		1	2							
IAN029	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-D2 (339)	241	1	1	1	2		1				1		1	2							
IAN030	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	PMW-1	NA	1	1	1	2						1		1	2							
IAN031	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	PMW-2	NA	1	1	1	2						1		1	2							
IAN032	QC	GROUND WATER	FBLK		/ /	TAN	FIELD BLANK	QC	NA	1	1	1	2				1	1	1	1	1	2							

The sampling activity displayed on this table represents the first six characters of the sample identification number.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethane/Ethene/Methane

AT5: Ethane/Ethene/Methane - MS/MSD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Gamma Spec

AT9: Gross Alpha

AT10: Propionate/Butyrate/Acetate/Lactate

Analysis Suites:

Analysis Suite #1: Ammonia Nitrogen, Phosphate, Sulfate, Iron (Inorganic Analysis)

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT11: Sr-90

AT12: Tritium

AT13: VOCs (TAL)

AT14: D

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Split samples for VOCs (TAL) and Ethane/Ethene/Methane analyses will be collected. One set will go to IRC and the other to the off-site laboratory.

Field Tests - Analysis Suite #1, Alkalinity, and Chemical Oxygen Demand

Contingencies:

Plan Table Number: INITIAL_ANNUAL

SAP Number: INEEL/EXT-2002-00779

Date: 11/04/2002 Plan Table Revision: 0.0 Project: OU 1-07B IRB REMEDIAL ACTION GW - INITIAL ANNUAL (PM) Project Manager: NELSON, L. O.

DRAFT

Sampler: Carrell, R. E.

BMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																				
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C5	EQ	E3	F6	R5	R4	GA	1N	RB	R6	VA	VE						
IAN033	QC	GROUND WATER	TBLK		/ /	TAN	TRIP BLANK	QC	NA				3									3							

The sampling activity displayed on this table represents the first six characters of the sample identification number.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethane/Ethene/Methane

AT5: Ethane/Ethene/Methane - MS/MSD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Gamma Spec

AT9: Gross Alpha

AT10: Propionate/Butyrate/Acetate/Lactate

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT11: Sr-90

AT12: Tritium

AT13: VOCs (TAL)

AT14: VOCs (TAL) - MS/MSD

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Split samples for VOCs (TAL) and Ethane/Ethene/Methane analyses will be collected. One set will go to IRC and the other to the off-site laboratory.

Field Tests - Analysis Suite #1, Alkalinity, and Chemical Oxygen Demand

Analysis Suites:

Analysis Suite #1: Ammonia Nitrogen, Phosphate, Sulfate, Iron (Inorganic Analysis)

Contingencies:

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

Plan Table Number: INIT_COMPLIANCE

SAP Number: INEEL/EXT-2002-00779

DRAFT

Sampler: Carroll, R. E.

Date: 11/04/2002 Plan Table Revision: 0.0 Project: OU 1-07B IRB REMEDIAL ACTION GW - INITIAL COMPLIANCE - GUART Project Manager: NELSON, L. D. SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1 VA	AT2 VE	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
IOC008	REG/QC	GROUND WATER	DUP		/ /	TAN	MONITORING WELL	TAN-28 (1008)	243	2																			
IOC001	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-30A (1012)	313		1																		
IOC002	QC	GROUND WATER	FBLK		/ /	TAN	FIELD BLANK	QC	NA	1																			
IOC003	QC	GROUND WATER	TBLK		/ /	TAN	TRIP BLANK	QC	NA	1																			

The sampling activity displayed on this table represents the first six characters of the sample identification number.

AT1: VOCs (TAL)

AT2: VOCs (TAL) - MS/MSD

AT3:

AT4:

AT5:

AT6:

AT7:

AT8:

AT9:

AT10:

AT11:

AT12:

AT13:

AT14:

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and

Analysis Suites:

Contingencies:

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

Plan Table Number: OPTIMIZ_MONTHLY

SAP Number: INEEL/EXT-2002-00779

DRAFT

Date: 11/04/2002 Plan Table Revision: 0.0 Project: OU 1-07B ISB REMEDIAL ACTION GW - OPTIMIZATION MONTHLY (PM) Project Manager: NELSON, L. O.

Sampler: Carroll, R. E.

SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																	
Sampling Activity	Sample Type	Sample Matrix	Cell Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C5	EG	E9	F8	R5	1N	R8	VA	VE									
OPT000	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TSF-05A (71)	235	1	1	1	1			1	1	1	1										
OPT001	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TSF-05B (71)	270	1	1	1	1			1	1	1	1										
OPT002	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-25 (1116D	218	1	1	1	1			1	1	1	1										
OPT003	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-26 (1116)	389	1	1	1	1		1	1	1	1	1										
OPT004	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-27 (1009)	235	1	1	1	1				1	1	1										
OPT005	REG/QC	GROUND WATER	DUP		/ /	TAN	MONITORING WELL	TAN-28 (1008)	240	2	2	2	2				2	2	2										
OPT006	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-29 (1010)	253	1	1	1	1				1	1	1										
OPT007	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-30A (1012)	310	1	1	1	1				1	1		1									
OPT008	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-31 (1219)	258	1	1	1	1			1	1	1	1										
OPT009	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37A (1163)	240	1	1	1	1				1	1	1										
OPT010	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37B (1163)	272	1	1	1	1				1	1	1										
OPT011	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37C (1163)	375	1	1	1		1			1	1	1										
OPT012	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-10A (340)	233	1	1	1	1				1	1	1										
OPT013	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-02 (339)	241	1	1	1	1				1	1	1										
OPT014	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	PMW-1	TBD	1	1	1	1				1	1	1										
OPT015	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	PMW-2	TBD	1	1	1	1				1	1	1										
OPT016	QC	GROUND WATER	FBLK		/ /	TAN	FIELD BLANK	QC	NA	1	1	1	1				1	1	1										

The sampling activity displayed on this table represents the first six characters of the sample identification number.

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethane/Ethene/Methane

AT5: Ethane/Ethene/Methane - MS/MSD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Propionate/Butyrate/Acetate/Lactate

AT9: Tritium

AT10: VOCs (TAL)

AT11: VOCs (TAL) - MS/MSD

AT12:

AT13:

AT14:

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Field Tests - Analysis Suite #1, Alkalinity, and Chemical Oxygen Demand

Analysis Suites:

Analysis Suite #1: Sulfate, Iron (Inorganic Analysis)

Contingencies:

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

Plan Table Number: OPTIMIZ_MONTHLY

SAP Number: INEEL/EXT-2002-00778

DRAFT

Sampler: Carroll, R. E.

Date: 11/04/2002 Plan Table Revision: 0.0 Project: OU 1-07B ISB REMEDIAL ACTION GW - OPTIMIZATION MONTHLY (PM) Project Manager: NELSON, L. O. SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																				
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C5	EG	E3	F8	R5	1N	R8	VA	VE									
OPT017	QC	GROUND WATER	TBLK		/ /	TAN	TRIP BLANK	QC	NA				2						2										

The sampling activity displayed on this table represents the first six characters of the sample identification number.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethane/Ethene/Methane

AT5: Ethane/Ethene/Methane - MS/MSD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Propionate/Butyrate/Acetate/Lactate

AT9: Tritium

AT10: VOCs (TAL)

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT11: VOCs (TAL) - MS/MSD

AT12:

AT13:

AT14:

AT15:

AT16:

AT17:

AT18:

AT19:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Field Tests - Analysis Suite #1, Alkalinity, and Chemical Oxygen Demand

Analysis Suites:

Analysis Suite #1: Sulfide, Iron (Inorganic Analysis)

Contingencies:

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

Page 1 of 2

Plan Table Number: OPTIMIZ_QUARTER

SAP Number: INEEL/EXT-2002-00779

DRAFT

Date: 11/11/2002 Plan Table Revision: 0.0 Project: OU 1-07B ISB REMEDIAL ACTION GWM - OPTIMIZATION QURTRLY (PM) Project Manager: NELSON, L. O.

IE.

SMO

R, D. D.

Sample Description					Planned Date	Sample Location				Enter Analysis Types (AT) and Quantity Requested																
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method		Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C5	EG	E3	F8	R5	R4	1N	RB	R8	VA	VE							
MTZ000	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TSF-05A (71)	235	1	1	1	2			1		1		1	2								
MTZ001	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TSF-05B (71)	270	1	1	1	2			1		1		1	2								
MTZ002	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-25 (1117)	218	1	1	1	2			1		1		1	2								
MTZ003	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-26 (1118)	389	1	1	1	2			1		1		1	2								
MTZ004	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-27 (1009)	235	1	1	1	2					1		1	2								
MTZ005	REG/QC	GROUND WATER	DUP			TAN	MONITORING WELL	TAN-28 (1008)	240	2	2	2	4					2		2	4								
MTZ006	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-29 (1010)	253	1	1	1	2				1	1	1	1	2								
MTZ007	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-30A (1012)	310	1	1	1	2					1		1		2							
MTZ008	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-31 (1219)	258	1	1	1	2			1		1		1	2								
MTZ009	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-37A (1163)	240	1	1	1		2				1		1	2								
MTZ010	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-37B (1163)	272	1	1	1	2					1		1	2								
MTZ011	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-37C (1163)	375	1	1	1	2					1		1	2								
MTZ012	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-10A (348)	233	1	1	1	2		1			1		1	2								
MTZ013	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-D2 (339)	241	1	1	1	2					1		1	2								
MTZ014	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	PMW-1	TBD	1	1	1	2					1		1	2								
MTZ015	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	PMW-2	TBD	1	1	1	2					1		1	2								
MTZ034	QC	GROUND WATER	FBLK			TAN	FIELD BLANK	QC	NA	1	1	1	2				1	1	1	1	2								

e sampling activity displayed on this table represents the first six characters of the sample identification number. The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

1: Alkalinity

2: Analysis Suite #1

3: Chemical Oxygen Demand

4: Ethane/Ethene/Methane

5: Ethane/Ethene/Methane - MS/MSD

6: Field Standard Addition - QC

7: Gamma Screen

8: Gamma Spec

9: Propionate/Butyrate/Acetate/Lactate

0: Sr-90

lysis Suites:

lysis Suite #1: Sulfate, Iron (Inorganic Analysis)

AT11: Tritium

AT12: VOCs (TAL)

AT13: VOCs (TAL) - MS/MSD

AT14:

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Contingencies:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Field Tests - Analysis Suite #1, alkalinity, and COD

Split samples will be collected at all locations for VOCs (TAL) and Ethane/Ethene/Methane analyses

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

Plan Table Number: OPTIMIZ_QUARTER

Page 2 of 2

SAP Number: INEEL/EXT-2002-00778

DRAFT

Date: 11/11/2002 Plan Table Revision: 0.0 Project: OU 1-07B ISB REMEDIAL ACTION GWM - OPTIMIZATION QURTRLY (PM) Project Manager: NELSON, L. O.

Sampler: Carroll, R. E.

SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																				
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C6	EG	E3	F6	R5	R4	1N	RB	R6	VA	VE							
MTZ033	QC	GROUND WATER	TBLK			TAN	TRIP BLANK	QC	NA				3								3								

The sampling activity displayed on this table represents the first six characters of the sample identification number.

AT1: Alkalinity

AT2: Analyte Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethene/Ethane/Methane

AT5: Ethene/Ethane/Methane - MS/MSD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Gamma Spec

AT9: Propionate/Butyrate/Acetate/Lactate

AT10: Sr-90

Analysis Suite:

Analysis Suite #1: Sulfate, Iron (Inorganic Analysis)

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT11: Tritium

AT12: VOCs (TAL)

AT13: VOCs (TAL) - MS/MSD

AT14:

AT15:

AT16:

AT17:

Contingencies:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Field Tests - Analysis Suite #1, alkalinity, and COD

Split samples will be collected at all locations for VOCs (TAL) and Ethene/Ethane/Methane analyses

Plan Table Number: OPTIMIZ_SEMI

SAP Number: INEEL/EXT-2002-00779

DRAFT

Sampler: Carrell, R. E.

Date: 07/19/2002 Plan Table Revision: 0.0 Project: OU 1-07B ISB REMEDIAL ACTION GW - OPTIMIZATION SEMI (PM) Project Manager: NELSON, L. O. SMO Contact: KRCHNER, D. R

Sample Description						Sample Location				Enter Analyte Types (AT) and Quantity Requested																	
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C8	EG	E3	P8	R5	R4	1N	R8	R6	VA	VE							
OSM000	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TSF-05A (71)	235	1	1	1	2			1		1		1	2								
OSM001	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TSF-05B (71)	270	1	1	1	2			1		1		1	2								
OSM002	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-25 (1117)	218	1	1	1	2			1		1		1	2								
OSM003	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-26 (1118)	389	1	1	1	2			1		1		1	2								
OSM004	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-27 (1009)	235	1	1	1	2					1		1	2								
OSM005	REG/QC	GROUND WATER	DUP		/ /	TAN	MONITORING WELL	TAN-28 (1009)	240	2	2	2	4					2		2	4								
OSM006	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-29 (1010)	253	1	1	1	2				1	1	1	1	2								
OSM007	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-30A (1012)	310	1	1	1	2					1		1		2							
OSM008	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-31 (1219)	258	1	1	1	2			1		1		1	2								
OSM009	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37A (1163)	240	1	1	1	2		1			1		1	2								
OSM010	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37B (1163)	272	1	1	1	2					1		1	2								
OSM011	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37C (1163)	375	1	1	1		2				1		1	2								
OSM012	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-10A (348)	233	1	1	1	2					1		1	2								
OSM013	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-D2 (339)	241	1	1	1	2					1		1	2								
OSM014	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	PMW-1	TBD	1	1	1	2					1		1	2								
OSM015	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	PMW-2	TBD	1	1	1	2					1		1	2								
OSM016	QC	GROUND WATER	FBLK		/ /	TAN	FIELD BLANK	QC	NA	1	1	1	2				1	1	1	1	2								

The sampling activity displayed on this table represents the first six characters of the sample identification number.

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethane/Ethene/Methane

AT5: Ethane/Ethene/Methane - MS/MSD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Gamma Spec

AT9: Propionate/Butyrate/Acetate/Lactate

AT10: Sr-90

AT11: Tritium

AT12: VOCs (TAL)

AT13: VOCs (TAL) - MS/MSD

AT14:

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Split samples for VOCs (TAL will be collected. One set will go to IRC and the other to the off-site laboratory.

Field Tests - Analysis Suite #1, Alkalinity, and Chemical Oxygen Demand

Analysis Suites:

Analysis Suite #1: Ammonia Nitrogen, Phosphate, Sulfate, Iron (Inorganic Analysis)

Contingencies:

Plan Table Number: OPTIMIZ_SEMI

SAP Number: INEEL/EXT-2002-00779

DRAFT

Sampler: Carroll, R. E.

Date: 07/19/2002 Plan Table Revision: 0.0 Project: OU 1-07B ISB REMEDIAL ACTION GW - OPTIMIZATION SEMI (PM) Project Manager: NELSON, L. O. SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																				
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C6	EG	E3	F9	R5	R4	1N	RB	R9	VA	VE							
OBMD17	QC	GROUND WATER	TBLK		/ /	TAN	TRIP BLANK	QC	NA				3								3								

The sampling activity displayed on this table represents the first six characters of the sample identification number.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethene/Ethane/Methane

AT5: Ethene/Ethane/Methane - MS/MSD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Gamma Spec

AT9: Propionate/Butyrate/Acetate/Lactate

AT10: Sr-90

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT11: Tritium

AT12: VOCs (TAL)

AT13: VOCs (TAL) - MS/MSD

AT14:

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Split samples for VOCs (TAL will be collected. One set will go to IRC and the other to the off-site laboratory.

Field Tests - Analysis Suite #1, Alkalinity, and Chemical Oxygen Demand

Analysis Suite:

Analysis Suite #1: Ammonia Nitrogen, Phosphate, Sulfate, Iron (Inorganic Analysis)

Contingencies:

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

Plan Table Number: OPTIMIZ_ANNUAL

SAP Number: INEEL/EXT-2002-00779

SAFT

Date: 11/11/2002 Plan Table Revision: 0.0 Project: OU 1-07B ISB REMEDIAL ACTION GWMI - OPTIMIZATION ANNUAL (PM) Project Manager: NELSON, L. O.

Sampler: Carroll, R. E.

SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																			
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C5	EG	E3	F6	R5	R4	GA	1N	RB	R6	VA	VE						
MTZ016	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TSF-06A (71)	235	1	1	1	2			1		1	1		1	2							
MTZ017	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TSF-06B (71)	270	1	1	1	2			1		1	1		1	2							
MTZ018	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-25 (1117)	218	1	1	1	2			1		1	1		1	2							
MTZ019	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-26 (1116)	368	1	1	1	2			1		1	1		1	2							
MTZ020	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-27 (1009)	235	1	1	1	2						1		1	2							
MTZ021	REG/QC	GROUND WATER	DUP			TAN	MONITORING WELL	TAN-28 (1008)	240	2	2	2	4					2	2		2	4							
MTZ022	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-29 (1010)	253	1	1	1	2				1	1	1	1	1	2							
MTZ023	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-30A (1012)	310	1	1	1	2		1				1		1	2							
MTZ024	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-31 (1219)	298	1	1	1	2			1		1	1		1		2						
MTZ025	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-37A (1163)	240	1	1	1	2						1		1	2							
MTZ026	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-37B (1163)	272	1	1	1		2					1		1	2							
MTZ027	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-37C (1163)	375	1	1	1	2						1		1	2							
MTZ028	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-10A (348)	233	1	1	1	2						1		1	2							
MTZ029	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-D2 (338)	241	1	1	1	2						1		1	2							
MTZ030	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	PMW-1	TBD	1	1	1	2						1		1	2							
MTZ031	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	PMW-2	TBD	1	1	1	2						1		1	2							
MTZ032	QC	WATER	FBLK			TAN	FIELD BLANK	QC	NA	1	1	1	2				1	1	1	1	1	2							

The sampling activity displayed on this table represents the first six characters of the sample identification number.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethene/Ethane/Methane

AT5: Ethene/Ethane/Methane - MBAMD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Gamma Spec

AT9: Gross Alpha

AT10: Propionate/Butyrate/Acetate/Lactate

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT11: Sr-90

AT12: Tritium

AT13: VOCs (TAL)

AT14: VOCs (TAL) - MBAMSD

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Field Tests - Analysis Suite #1, alkalinity, COD

Split samples will be collected at all locations for VOCs (TAL) and Ethene/Ethane/Methane analyses

Analysis Suites:

Analysis Suite #1: Ammonia Nitrogen, Phosphate, Sulfate, Iron (Inorganic Analysis)

Contingencies:

Plan Table Number: OPTIMIZ_ANNUAL

SAP Number: IMEEL/EXT-2002-00779

DRAFT

Sampler: Carroll, R. E.

Date: 11/11/2002 Plan Table Revision: 0.0 Project: OU 1-07B ISB REMEDIAL ACTION GWM - OPTIMIZATION ANNUAL (PM) Project Manager: NELSON, L. O. SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																				
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C5	EG	E3	F6	R5	R4	GA	1N	RB	RB	VA	VE						
MTZ933	QC	WATER	TBLK			TAN	TRIP BLANK	QC	NA				3									3							

The sampling activity displayed on this table represents the first six characters of the sample identification number.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethane/Ethene/Methane

AT5: Ethane/Ethene/Methane - MS/MSD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Gamma Spec

AT9: Gross Alpha

AT10: Propionate/Butyrate/Acetate/Lactate

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT11: Sr-90

AT12: Tritium

AT13: VOCs (TAL)

AT14: VOCs (TAL) - MS/MSD

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Field Tests - Analysis Suite #1, alkalinity, COD

Split samples will be collected at all locations for VOCs (TAL) and Ethane/Ethene/Methane analyses

Analysis Suites:

Analysis Suite #1: Ammonia Nitrogen, Phosphate, Sulfate, Iron (Inorganic Analysis)

Contingencies:

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

Plan Table Number: OPT_COMPLIANCE

SAP Number:

DRAFT

Sampler: Carroll, R. E.

Date: 07/18/2002 Plan Table Revision: 0.0 Project: OPTIMIZATION - COMPLIANCE MONITORING - QUARTERLY Project Manager: NELSON, L. O. S&O Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																				
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1 VA	AT2 VE	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
OCM000	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	PMW-1			1																		
OCM001	REG/QC	GROUND WATER	DUP		/ /	TAN	MONITORING WELL	PMW-2		2																			
OCM002	QC	GROUND WATER	FBLK		/ /	TAN	FIELD BLANK	QC	NA	1																			
OCM003	QC	GROUND WATER	TBLK		/ /	TAN	TRIP BLANK	QC	NA	1																			

The sampling activity displayed on this table represents the first six characters of the sample identification number.

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT1: VOCs (TAL)

AT2: VOCs (TAL) - MS/MSD

AT3:

AT4:

AT5:

AT6:

AT7:

AT8:

AT9:

AT10:

AT11:

AT12:

AT13:

AT14:

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Analysis Suites

Contingencies

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

Plan Table Number: LTERM_QUARTER

SAP Number: INEEL/EXT-2002-00779

DRAFT

Date: 11/1/2002 [redacted] Project: [redacted] REMEDIAL AC[redacted]100 TERM[redacted] Project Manager [redacted]SON, L O

Sampler: Carroll, R. E.

SMO Contact: KIRCHNER, D R

Sample Description					Planned Date	Sample Location				Enter Analysis Types (AT) and Quantity Requested																			
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method		Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C5	EG	E3	F8	R5	R4	1N	R8	R9	VA	VE							
LTQ016	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TSF-05A (71)	236	1	1	1	2			1		1		1	2								
LTQ017	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TSF-05B (71)	270	1	1	1	2			1		1		1	2								
LTQ018	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-25 (1117)	218	1	1	1	2			1		1		1	2								
LTQ019	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-26 (1118)	389	1	1	1	2			1		1		1	2								
LTQ020	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-27 (1009)	235	1	1	1	2					1		1	2								
LTQ021	REG/QC	GROUND WATER	DUP		/ /	TAN	MONITORING WELL	TAN-28 (1008)	240	2	2	2	4					2		2	4								
LTQ022	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-29 (1010)	253	1	1	1	2				1	1	1	1	2								
LTQ023	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-30A (1012)	310	1	1	1	2					1		1		2							
LTQ024	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-31 (1219)	258	1	1	1	2			1		1		1	2								
LTQ025	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37A (1183)	240	1	1	1		2				1		1	2								
LTQ026	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37B (1183)	272	1	1	1	2					1		1	2								
LTQ027	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37C (1183)	375	1	1	1	2					1		1	2								
LTQ028	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-10A (348)	233	1	1	1	2		1			1		1	2								
LTQ029	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-02 (338)	241	1	1	1	2					1		1	2								
LTQ030	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	PMW-1	TBD	1	1	1	2					1		1	2								
LTQ031	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	PMW-2	TBD	1	1	1	2					1		1	2								
LTQ032	QC	GROUND WATER	FBLK		/ /	TAN	FIELD BLANK	QC	NA	1	1	1	2				1	1	1	1	2								

The sampling activity displayed on this table represents the first six characters of the sample identification number.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethane/Ethene/Methane

AT5: Ethane/Ethene/Methane - MS/MSD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Gamma Spec

AT9: Propionate/Butyrate/Acetate/Lactate

AT10: Sr-90

Analysis Suites:

Analysis Suite #1: Sulfate, Iron (Inorganic Analysis)

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT11: Tritium

AT12: VOCs (TAL)

AT13: VOCs (TAL) - MS/MSD

AT14:

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Field Tests - Analysis Suite #1, alkalinity, and COD

Split samples will be collected at all locations for VOCs (TAL) and Ethane/Ethene/Methane analyses

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

Plan Table Number: LTERM_QUARTER

SAP Number: INEEL/EXT-2002-00778

DRAFT

Date: 11/11/2002 Plan Table Revision: 0.0 Project: OU 1-07B ISB REMEDIAL ACTION GWM - LONG TERM QUARTERLY (PM) Project Manager: NELSON, L. O.

Sampler: Carroll, R. E.

SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C5	EG	E3	F8	R5	R4	1N	R8	R8	VA	VE							
LTQ033	QC	GROUND WATER	TBLK		/ /	TAN	TRIP BLANK	QC	NA				3								3								

The sampling activity displayed on this table represents the first six characters of the sample identification number.

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethane/Ethene/Methane

AT5: Ethane/Ethene/Methane - MBA/BD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Gamma Spec

AT9: Propionate/Butyrate/Acetate/Lactate

AT10: Sr-90

AT11: Tritium

AT12: VOCs (TAL)

AT13: VOCs (TAL) - MBA/BD

AT14:

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Field Tests - Analysis Suite #1, alkalinity, and COD

Split samples will be collected at all locations for VOCs (TAL) and Ethane/Ethene/Methane analyses

Analysis Suite:

Analysis Suite #1: Sulfate, Iron (Inorganic Analysis)

Contingencies:

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

Plan Table Number: LTERM_SEMI

SAP Number: INEELEXT-2002-00779

Date: 11/11/2002 Plan Table Revision: 0.0 Project: OU 1-07B ISB REMEDIAL ACTION GW - LONG TERM SEMI (PM) Project Manager: NELSON, L. O.

DRAFT

Sampler: Carrell, R. E.

SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																				
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C5	EG	E3	F6	R5	R4	1N	R8	R6	VA	VE							
LT9033	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TSF-05A (71)	235	1	1	1	2			1		1		1	2								
LT9034	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TSF-05B (71)	270	1	1	1	2			1		1		1	2								
LT9035	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-25 (1117)	218	1	1	1	2			1		1		1	2								
LT9036	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-26 (1118)	380	1	1	1	2			1		1		1	2								
LT9037	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-27 (1009)	235	1	1	1	2					1		1	2								
LT9038	REG/QC	GROUND WATER	DUP		/ /	TAN	MONITORING WELL	TAN-28 (1008)	240	2	2	2	4					2		2	4								
LT9039	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-29 (1010)	253	1	1	1	2				1	1	1	1	2								
LT9040	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-30A (1012)	310	1	1	1	2					1		1		2							
LT9041	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-31 (1219)	258	1	1	1	2			1		1		1	2								
LT9042	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37A (1163)	240	1	1	1	2		1			1		1	2								
LT9043	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37B (1163)	272	1	1	1	2					1		1	2								
LT9044	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37C (1163)	375	1	1	1		2				1		1	2								
LT9045	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-10A (348)	233	1	1	1	2					1		1	2								
LT9046	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-02 (339)	241	1	1	1	2					1		1	2								
LT9047	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	PMW-1	TBD	1	1	1	2					1		1	2								
LT9048	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	PMW-2	TBD	1	1	1	2							1	2								
LT9049	QC	GROUND WATER	FBLK		/ /	TAN	FIELD BLANK	QC	NA	1	1	1	2				1	1	1	1	2								

The sampling activity displayed on this table represents the first six characters of the sample identification number.

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethane/Ethene/Methane

AT5: Ethane/Ethene/Methane - MB/MBD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Gamma Spec

AT9: Propionate/Butyrate/Acetate/Lactate

AT10: Sr-90

Analysis Suites:

Analysis Suite #1: Ammonia Nitrogen, Phosphate, Sulfate, Iron (Inorganic Analysis)

AT11: Tritium

AT12: [illegible] (TAL)

AT13: VOCs (TAL) - MB/MBD

AT14:

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Contingencies:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Split samples for VOCs (TAL will be collected. One set will go to IRC and the other to the off-site laboratory.

Field Tests - Analysis Suite #1, Alkalinity, and Chemical Oxygen Demand

Plan Table Number: LTERM_SEMI

SAP Number: INEEL/EXT-2002-00779

DRAFT

Sampler: Carroll, R. E.

Date: 11/11/2002 Plan Table Revision: 0.0 Project: OU 1-07B ISB REMEDIAL ACTION GW - LONG TERM SEMI (PM) Project Manager: NELSON, L. O. SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																				
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	O5	EQ	E3	F8	R5	R4	1N	R8	R8	VA	VE							
LT8050	QC	GROUND WATER	TBLK		/ /	TAN	TRIP BLANK	QC	NA				3								3								

The sampling activity displayed on this table represents the first six characters of the sample identification number.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethane/Ethene/Methane

AT5: Ethane/Ethene/Methane - MS/MSD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Gamma Spec

AT9: Propionate/Bulyrate/Acetate/Lactate

AT10: Sr-90

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT11: Tritium

AT12: VOCs (TAL)

AT13: VOCs (TAL) - MS/MSD

AT14:

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Split samples for VOCs (TAL) will be collected. One set will go to IRC and the other to the off-site laboratory.

Field Tests - Analysis Suite #1, Alkalinity, and Chemical Oxygen Demand

Analysis Suites:

Analysis Suite #1: Ammonia Nitrogen, Phosphate, Sulfate, Iron (Inorganic Analysis)

Contingencies:

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

Plan Table Number: LTERM_ANNUAL

SAP Number: INEEL/EXT-2002-00778

DRAFT

Date: 11/11/2002 Plan Table Revision: 0.0 Project: OU 1-07B ISB REMEDIAL ACTION GWM - LONG TERM ANNUAL (FY4) Project Manager: NELSON, L. O.

Sampler: Carroll, R. E.

SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																			
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C5	EG	E3	F6	R5	R4	QA	1N	R8	R6	VA	VE						
LTA016	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TSF-05A (71)	235	1	1	1	2			1		1	1		1	2							
LTA017	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TSF-05B (71)	270	1	1	1	2			1		1	1		1	2							
LTA018	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-25 (1117)	218	1	1	1	2			1		1	1		1	2							
LTA019	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-26 (1118)	389	1	1	1	2			1		1	1		1	2							
LTA020	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-27 (1009)	235	1	1	1	2						1		1	2							
LTA021	REG/QC	GROUND WATER	DUP		/ /	TAN	MONITORING WELL	TAN-28 (1008)	240	2	2	2	4					2	2		2	4							
LTA022	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-29 (1010)	253	1	1	1	2				1	1	1	1	1	2							
LTA023	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-30A (1012)	310	1	1	1	2		1				1		1	2							
LTA024	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-31 (1219)	258	1	1	1	2			1		1	1		1		2						
LTA025	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37A (1163)	240	1	1	1	2						1		1	2							
LTA026	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37B (1163)	272	1	1	1		2					1		1	2							
LTA027	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37C (1163)	375	1	1	1	2						1		1	2							
LTA028	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-10A (348)	233	1	1	1	2						1		1	2							
LTA029	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-D2 (339)	241	1	1	1	2						1		1	2							
LTA030	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	PMW-1	TBD	1	1	1	2						1		1	2							
LTA031	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	PMW-2	TBD	1	1	1	2						1		1	2							
LTA032	QC	WATER	FBLK		/ /	TAN	FIELD BLANK	QC	NA	1	1	1	2					1	1		1	2							

The sampling activity displayed on this table represents the first six characters of the sample identification number.

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethene/Ethane/Methane

AT5: Ethene/Ethane/Methane - MS/MSD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Gamma Spec

AT9: Gross Alpha

AT10: Propionate/Butyrate/Acetate/Lactate

Analysis Suites:

Analysis Suite #1: Ammonia-Nitrogen, Phosphate, Sulfate, Iron (Ferrous), Acetic Acid, ...

AT11: Sr-90

AT12: Tritium

AT13: VOCs (TAL)

AT14: VOCs (TAL) - MS/MSD

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Contingencies:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Field Tests - Analysis Suite #1, alkalinity, COD

Split samples will be collected at all locations for VOCs (TAL) and Ethene/Ethane/Methane analyses

Plan Table Number: LTERM_ANNUAL

SAP Number: INEEL/EXT-2002-00779

DRAFT

Sampler: Carroll, R. E.

Date: 11/11/2002 Plan Table Revision: 0.0 Project: OU 1-07B ISB REMEDIAL ACTION GWM - LONG TERM ANNUAL (PM) Project Manager: NELSON, L. O. SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																				
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C5	EG	E3	F8	R5	R4	GA	1N	RS	R8	VA	VE						
LTA033	QC	WATER	TBLK		/ /	TAN	TRIP BLANK	QC	NA				3									3							

The sampling activity displayed on this table represents the first six characters of the sample identification number. The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethane/Ethene/Methane

AT5: Ethane/Ethene/Methane - MS/MSD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Gamma Spec

AT9: Gross Alpha

AT10: Propionate/Butyrate/Acetate/Lactate

AT11: Sr-90

AT12: Tritium

AT13: VOCs (TAL)

AT14: VOCs (TAL) - MS/MSD

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Field Tests - Analysis Suite #1, alkalinity, COD

Split samples will be collected at all locations for VOCs (TAL) and Ethane/Ethene/Methane analyses

Analysis Suites:

Analysis Suite #1: Ammonia Nitrogen, Phosphate, Sulfate, Iron (Inorganic Analysis)

Contingencies

Appendix D

OU 1-07B ISB Monitoring Well Information

Table D-1. Construction details for Operable Unit 1-07B in situ bioremediation groundwater monitoring wells.

Sample location	Well name	Well ID	Northing	Easting	Elevation at top of casing (ft above msl)	Well total depth (ft bls)	Screened interval(s) (ft bls)	Screen type	Pump type	Sampling depth (ft bls)	Pump discharge line or pipe diameter (in.)	Discharge line or pipe material	Length of discharge line (ft)	Estimated purge volume (gal)
TSF-05A	ANP-03	71	795401.63	356999.79	4782.00	310.00	180-244	p	RF2	235[a]	0.5	poly	275.00	9
TSF-05B		71	795401.63	356999.79	4782.00	310.00	269-305	p	RF2	275	0.5	poly	275.00	9
TAN-IOA		348	795239.78	356921.78	4780.70	250.00	216-250	ss	RF4, 5E8	238	1	ss	233.00	29
TAN-25		1117	795386.10	357019.30	4781.38	315.00	217-297	ss	RF4	218	1	ss	218.00	27
TAN-26		1118	795372.30	357040.60	4781.93	412.00	369-409	ss	RF4	389	1	ss	389.00	48
TAN-27		1009	795158.40	357207.30	4782.16	253.70			RF4, 5E8	235	I	ss	235.00	29
TAN-28		1008	795380.60	357261.00	4781.07	262.00	220-260	ss	RF4, 5E8	242	0.75	ss	241.50	17
TAN-29		1010	795330.80	357508.10	4782.68	265.00	222.25-262.25	ss	RF4, 16E4	253	1	ss	253.20	31
TAN-30A		1012	795363.60	357269.80	4780.62	320.90	299.90-319.90	ss	RF4, 5E8	313	0.75	ss	312.70	22
TAN-31	TANT-INJ-A-003	1219	795450.79	356995.05	4780.83	310.00	205-310	o	RF2[b]	258	0.5 or0.625	poly	275.00 or 500.00	8 or 25
TAN-37A	TANT-MON-A-011	1163	795366.71	357144.97	4782.32	415.90	204-415.90	o	RF2	240	0.5	poly	250.00	8
TAN-37B		1163	795366.71	357144.97	4782.32	415.90	204-415.90	o	RF2	272	0.5	poly	275.00	9
TAN-37C		1163	795366.71	357144.97	4782.32	415.90	204-415.90	o	RF4	375	I	ss	375.00	46
TAN-D2		339	795505.95	356960.12	4779.89	262.00	116-126	p	RF4	242	1	ss	241.00	30
							201-222	p						
							232-251	p						
TAN-1859		1859	795376.32	357087.82	4785.23	301	204-301	o	RF2[b]	220	0.5 or0.625	poly	275.00 or 500.00	8 or25
TAN-1860		1860	795462.05	357257.08	4784.99	413	204-413	o	RF2[b]	269	0.5 or 0.625	poly	275.00 or 500.00	8 or25
TAN-IS61		1861	795268.73	357206.21	4785.53	414	204-414	o	RF2[b]	239	0.5 or0.625	poly	275.00 or 500.00	8 or 25

Table D-1. (continued).

Sample location	Well name	Well ID	Northing	Easting	Elevation at top of casing (ft above msl)	Well total depth (ft bls)	Screened interval(s) (ft bls)	Screen type	Pump type	Sampling depth (ft bls)	Pump discharge line or pipe diameter (in.)	Discharge line or pipe material	Length of discharge line (ft)	Estimated purge volume (gal)

a = pump on hose reel is raised to sample this location
b = Either a Port-a-Reel or **EZ-Reel** will be used for these wells; the first set of parameters applies to **EZ-Reels,** the second to the Port-a-Reels
p = perforated
poly = polyethylene
galv = galvanized
o = open hole
ss = stainless steel
RF2 = Grundfos RediFlo-2 pump
RF4 = Grundfos RediFlo-4 pump
Bar = Barcad
NP = No dedicated pump
TAN = Test Area North
TSF = Technical Support Facility